VPDES PERMIT FACT SHEET

This document gives the pertinent information concerning the reissuance of the VPDES permit listed below. This permit is being processed as a **minor municipal** permit. The effluent limitations contained in this permit will maintain the Water Quality Standards of 9 VAC 25-260-00 et seq.

The discharge results from the operation of a **0.60 MGD extended aeration activated sludge treatment plant** serving the Town of Stuart. This permit action consists of revising the total suspended solids and BOD_5 loading limitations, revising the total residual chlorine limitations, adding monitoring for temperature, and revising the special conditions. (SIC Code: 4952)

1. **Facility Name and Address:**
   Town of Stuart WWTP
   PO Box 422
   Stuart, VA 24171
   Location: 709 Commerce Street

2. **Permit No: VA0022985** Existing Permit Expiration Date: August 20, 2008

3. **Owner/ Facility Contact:** Mr. Marion "Pete" C. Slate, Jr., (276) 694-4477

4. **Application Complete Date:** May 19, 2008
   Permit Drafted By: Becky L. France
   Date: July 24, 2008
   DEQ Regional Office: West Central Regional Office
   Reviewed By: Kip D. Foster
   Reviewer's Signature: _____ Date: _____
   Public Comment Period Dates: From 7/8/08 To 8/7/08

5. **Receiving Stream Classification:**

Receiving Stream:	South Mayo River (River Mile: 30.78)		
Watershed ID:	VAW-L43R		
River Basin:	Roanoke River		
River Subbasin:	Roanoke River		
Section:	3g		
Class:	IV		
Special Standards:	none		
1-Day, 10-Year Low Flow:	5.5 MGD	1-Day, 10-Year High Flow:	8.9 MGD
7-Day, 10-Year Low Flow:	6.0 MGD	7-Day, 10-Year High Flow:	10 MGD
30-Day, 5-Year Low Flow:	9.5 MGD	Harmonic Mean Flow:	21 MGD
Tidal:	No	303(d) Listed:	No

Attachment A contains a copy of the flow frequency determination memorandum.

6. **Operator License Requirements:** II

7. **Reliability Class:** I

8. **Permit Characterization:**

( ) Private ( ) Interim Limits in Other Document
( ) Federal ( ) Possible Interstate Effect
( ) State
(X) POTW
( ) PVOTW

9. **Wastewater Treatment System:** A description of the wastewater treatment system is provided below. See **Attachment B** for the wastewater treatment schematic and **Attachment C** for a copy of the site inspection report. Treatment units associated with the discharge are listed in the table below.

Table I
DISCHARGE DESCRIPTION

Outfall Number	Discharge Sources	Treatment (Unit by Unit)	Design Flow
001	Stuart WWTP (domestic and industrial wastewater)	mechanical bar screen aerated grit collector activated sludge aeration basins secondary clarifiers (3) chlorine disinfection chlorine contact tank dechlorinator two aerobic sludge digestors sludge belt filter press	0.60 MGD

The Town of Stuart WWTP was built before 1976 and upgraded in 1988 to the present capacity of 0.60 MGD facility. The Town of Stuart operates an extended aeration activated sludge plant for the residents of the Stuart area. The wastewater works consists of a mechanical bar screen, aerated grit collector, activated sludge aeration basins, secondary clarifier, chlorine disinfection, chlorine contact tank, dechlorinator, and sludge digestor.

From the grit collector, wastewater flows to two parallel aeration basins. From the aeration basins, the wastewater is split between three secondary clarifiers. Polymer may be added to aid in settling.

From the secondary clarifiers, the wastewater overflows the weirs and enters the diversion chamber where chlorine gas is added. The chlorinated wastewater then flows through a pipe to a baffled chlorine contact tank. From the contact tank the treated wastewater is dechlorinated with sulfur dioxide and discharged into the South Mayo River.

10. **Sewage Sludge Use or Disposal:** A VPDES Sewage Sludge Permit Application Form was submitted for this facility to address disposal of sewage sludge from the wastewater treatment facility. Sludge is added in two aerated digesters having a total capacity of 86,550 gallons.

    Periodically, the sludge is pumped to the 0.5 meter filter belt press for thickening to a solids concentration of greater than 20 percent. The supernatant of the process is recycled to the head of the plant. Dewatered sludge is stored in a temporary storage building prior to land application. The concrete floor is equipped with a drain line which collects any seepage from the sludge and conveys it back to the plant for treatment. If the storage building is full, the plant's sludge is stored in three uncovered sludge drying beds. The drying beds have an underdrain system to collect seepage and redirect it to the treatment facility.

    The treated sludge is land applied to local farm land under the responsibility of the Town according to the Sludge Management Plan (SMP) submitted with the application. The SMP indicates that biosolids will be applied infrequently (once every three years), not exceeding the nitrogen agronomic rate, to each land application site. The biosolids meet the maximum monthly average pollutant concentration (PC) requirements in Table 3 of 9 VAC 25-31-540, achieve Class B pathogen reduction by aerobic digestion, and vector attraction reduction through the specific oxygen uptake rate equal to or less than 1.5 mg of oxygen per hour per gram of total solids (dry weight basis) or any other alternative methods that comply with 9 VAC 25-31-720.

11. **Discharge Location Description:** A USGS topographic map which indicates the discharge location, any significant dischargers, any water intakes, and other items of interest is included in **Attachment D**. The latitude and longitude of the discharge is N $36^{0}38'10''$, E $80^{0}15'15''$.

    Name of Topo: Stuart,VA Number: 019A

12. **Material Storage:** Chlorine and sulfur dioxide cylinders are stored in a ventilated building.

13. **Ambient Water Quality Information:** Memoranda or other information which helped to develop permit conditions (special water quality studies, STORET data, and any other biological and/or chemical data, etc.) are listed below.

    Flow frequencies for outfall 001 were determined by using flow frequencies for the gauge on the South Mayo River near Nettleridge, Virginia. The flow values at the discharge point were determined by drainage area proportions. The new flow frequencies are lower than the values in previous reissuance. **Attachment A** contains a copy of the flow frequency memorandum.

    The nearest STORET monitoring station (4ASMR033.98) is located on the South Mayo River at the State Road 787 bridge approximately 3.2 miles upstream from the discharge from the Town of Stuart WWTP (**Attachment E**). The 90^{th} percentile pH and temperature, used in the antidegradation wasteload allocation spreadsheet, were determined from these STORET station data. The mean hardness value from the STORET station was below 25 mg/L. Hardness values below 25 mg/L are off the scale used to establish the water quality criteria hardness equation to determine metals criteria. Therefore, a default hardness of 25 mg/L was used in the spreadsheet.

The Department of Conservation and Recreation's Division of Natural Heritage has designated a segment of stream beginning two miles upstream and ending one mile downstream of the discharge location as a Stream Conservation Unit (SCU). This SCU (Poorhouse Creek-Mayo River) has been given a biodiversity significance ranking of B2, which represents a site of very high significance. The natural heritage resources of concern associated with this SCU include orangefin madtom, and rustyside suckers. The Roanoke logperch is classified as threatened by the Virginia Department of Game and Inland Fisheries (VDGIF). The Rustyside sucker is classified as a species of concern but has not been confirmed below the discharge point. The Roanoke logperch is listed as a federal endangered species but its presence has not been confirmed.

According to Virginia Department of Game and Inland Fisheries (VDGIF) records, state threatened orangefin madtom is known in the South Mayo River upstream of this outfall location. In addition, the South Mayo River upstream of this discharge has been designated a wild trout stream. A copy of the Division of Natural Heritage report information and the VDGIF information on species of concern in the area of the discharge is included in **Attachment E.**

Stuart WWTP discharges into the Upper South Mayo River/ Russell Creek Watershed (VAW-L43R) as described in the 2004 305(b) DEQ Watershed Summary Report (**Attachment E**). This segment has been assessed as fully supporting, but threatened for the aquatic life use.

14. **Antidegradation Review and Comments:** Tier I _____ Tier II __X___ Tier III _____

The State Water Control Board's Water Quality Standards includes an antidegradation policy (9 VAC 25-260-30). All state surface waters are provided one of three levels of antidegradation protection. For Tier I or existing use protection, existing uses of the water body and the water quality to protect these uses must be maintained. Tier II water bodies have water quality that is better than the water quality standards. Significant lowering of the water quality of Tier II waters is not allowed without an evaluation of the economic and social impacts. Tier III water bodies are exceptional waters and are so designated by regulatory amendment. The antidegradation policy prohibits new or expanded discharges into exceptional waters.

The antidegradation review begins with Tier determination. The South Mayo River is not listed as a public water supply in the segment where the discharge is located. The South Mayo River in this segment (VAW-L43R) is not listed on Part I of the 303(d) list for exceedance of water quality criteria. Available pollutant data have been analyzed, and the existing water quality condition for pollutants for which data exist compared to the water quality standards. This analysis indicates the water quality of the receiving stream does not exceed numeric criteria for any pollutant analyzed. Therefore, this segment of the South Mayo River is classified as a Tier II water, and no significant degradation of existing quality is allowed.

For purposes of aquatic life protection in Tier II waters, "significant degradation" means that no more than 25 percent of the difference between the acute and chronic aquatic criteria values and the existing quality (unused assimilative capacity) may be allocated. For purposes of human health protection, "significant degradation" means that no more than 10 percent of the difference

between the human health criteria and the existing quality (unused assimilative capacity) may be allocated. The antidegradation baselines for aquatic life and human health are calculated for each pollutant as follows:

Antidegradation baseline (aquatic life) = 0.25 (WQS – existing quality) + existing quality

Antidegradation baseline (human health) = 0.10 (WQS – existing quality) + existing quality

Where:
"WQS" = Numeric criterion listed in 9 VAC 25-260-00 et seq. for the parameter analyzed
"Existing quality" = Concentration of the parameter being analyzed in the receiving stream

When applied, these "antidegradation baselines" become the new water quality criteria in Tier II waters, and effluent limits for future expansions or new facilities must be written to maintain the antidegradation baselines for each pollutants. Antidegradation baselines have been calculated as described above and included in **Attachment G**.

The facility's outfall 001 discharge is existing, and the application does not indicate an expansion or proposed increase in the discharge of pollutants via this outfall. Therefore, the antidegradation baselines do not apply to this permit reissuance. As the facility is not proposing any increase in the loading of any pollutants, the permit limits are in compliance with antidegradation requirements set forth in 9 VAC 25-260-30. The antidegradation review was conducted as described in Guidance Memorandum 00-2011, and complies with the antidegradation policy contained in Virginia's Water Quality Standards.

15. **Site Inspection:** Date: 1/8/08 Performed by: Becky L. France
Attachment C contains a copy of the site inspection memorandum.

16. **Effluent Screening and Limitation Development:** DEQ Guidance Memorandum 00-2011 was used to develop water quality based limits pursuant to water quality standards (9 VAC 25-260-5 et seq.). Refer to **Attachment G** for the wasteload allocation spreadsheet and effluent limit calculations. See **Table II** on page 18 for a summary of limits and monitoring requirements.

A. **Mixing Zone**

The MIXER program was run to determine the percentage of the receiving stream flow that could be used in the wasteload allocation calculations. The program output indicated that 100 percent of the 7Q10 and 63.93 percent of the 1Q10 may be used to calculate acute and chronic wasteload allocations (WLAs). A copy of the printout from the MIXER run is enclosed in **Attachment G**.

B. **Effluent Limitations for Conventional Pollutants**

Flow -- The permitted design flow of 0.60 MGD for this facility is taken from the previous permit and the application for the reissuance. In accordance with the current VPDES Permit Manual, flow is to be continuously measured.

pH -- The pH limits of 6.0 S.U. minimum and 9.0 S.U. maximum have been continued from the previous permit. These limits are based upon the water quality criteria in 9 VAC 25-260-50 for Class IV receiving waters and are in accordance with federal technology-based guidelines, 40 CFR Part 133, for secondary treatment. Grab samples shall continue to be collected once per day.

Total Suspended Solids (TSS) -- TSS is a technology-based requirement for municipal dischargers with secondary treatment required in accordance with 40 CFR Part 133. Effluent concentration limits of 30 mg/L as a monthly average and 45 mg/L as a maximum weekly average have been continued. The loading limits of 63 kg/d monthly average and 95 kg/d maximum weekly average have been revised to include only whole numbers. This change is in accordance with Guidance Memo 06-2016 which specifies that loading limits should be given in whole numbers. The decimal places have been dropped rather than rounded to avoid backsliding. TSS monitoring shall continue at three times per week via eight-hour composite samples.

Biological Oxygen Demand (BOD_5) -- Since there has been a decrease in the flow frequencies at the outfall, the new data have been entered into the Regional Water Quality Model for Free Flowing Streams (Version 4.0) to reassess the BOD_5 limits. A copy of the model output results is found in **Attachment H**. An initial DO concentration of 0 mg/L, a TKN value of 15 mg/L, and 28 mg/L for BOD_5 were used in the model input. The model predicted a DO sag at the initial discharge point to 7.025 mg/L. The model did not predict the dissolved oxygen to drop below the water quality criteria of 5.0 mg/L. Therefore, the current limits of 28 mg/L monthly average and 45 mg/L maximum weekly average have been continued from the previous permit. The loadings were established in the 303(e) Water Quality Management Plan (**Attachment E**) when the plant was upgraded to 0.60 MGD. The loading limits of 63 kg/day monthly average and 95 kg/day maximum weekly average have been revised to include only whole numbers. This change is in accordance with Guidance Memo 06-2016 which specifies that loading limits should be given in whole numbers. The decimal places have been dropped rather than rounded to avoid backsliding. Eight-hour composite samples shall continue to be collected three times per week.

C. Effluent Limitation Evaluation for Toxic Pollutants

In addition to the standard limitations, the discharge must be evaluated to determine whether there is a reasonable potential for the effluent to violate the water quality standards (WQSs) adopted by the State Water Control Board (9 VAC 25-260 et. seq). Toxic pollutant data submitted with the application were above the quantification levels for bis (2-ethylhexyl) phthalate, ammonia, dissolved copper, and dissolved zinc. These data are summarized in **Attachment F**.

In accordance with Guidance Memorandum 94-008, it is believed that bis (2-ethylhexyl) phthalate is probably introduced to the sample by plastic/rubber apparatus used in

collecting or preparing the sample for analysis. Consequently, it is recommended that analysis results should be disregarded if the substance is found in minute amounts and there is no definable source. Minute amounts are defined as less than 30 µg/L. The data point was 12.7 µg/L. Therefore, the data has been disregarded, and no further evaluation is necessary. The water quality criteria and wasteload allocations (WLAs) for these parameters were calculated and are included in the spreadsheet in **Attachment G.**

The effluent data for dissolved copper and dissolved zinc and associated acute and chronic WLAs were used as input in the Agency's STATS program to determine if limits are necessary. The STATS program outputs indicates that limits are not needed for copper or zinc.

The acute and chronic WLAs and a default ammonia concentration of 9.0 mg/L were used as input in the Agency's STATS program to determine if limits are necessary. The STATS program output indicates that limits are not needed for ammonia.

Temperature -- Daily temperature monitoring is being required in the reissued permit. These data will be reported as a maximum daily average for the purposes of calculating the 90th percentile effluent temperature and calibrating the Regional Water Quality Model. The 90th percentile temperature is used in the AWLA spreadsheet calculations. The temperature water quality criteria as per 9 VAC 25-260-50 for this Class IV receiving stream is 31 °C.

Total Residual Chlorine (TRC) -- The TRC limits in the previous permit were reassessed with the WLAs that were determined from the decreased stream flow frequencies. Based on the acute and chronic WLAs and the Agency's STATS program, permit limits of 0.069 mg/L monthly average and 0.084 mg/L maximum weekly average are needed in the permit. These more stringent limits replace the previous permit limits. Since the facility dechlorinates the effluent, a compliance schedule is not needed to meet these limitations. Effluent TRC will continue to be monitoring 1/day via grab samples.

17. **Basis for Sludge Use and Disposal Requirements:** Sewage sludge and land application site permit limitations and monitoring are required based on the VPDES Permit Regulation (9 VAC 25-31-10 et seq.) Part VI, Standards for the Use or Disposal of Sewage Sludge, and 40 CFR Part 503. Stuart WWTP is responsible for sludge use disposal (by land application) in accordance with their Sludge Management Plan (SMP), which is approved with this permit reissuance. A summary of the sludge quality from 2004 through 2007 is included in the **Attachment I.** The facility's biosolids meet the following treatment standards:

- The maximum monthly average pollutant concentration (PC) requirements in Table 3 of 9 VAC 25-31-540, Table 9 VAC 25-32-480, and Table 7 of 9 VAC-25-32-660.
- Class B pathogen reduction by anaerobic digestion and/or fecal coliform testing, and

- Vector attraction reduction through the specific oxygen uptake rate (SOUR) being equal to or less than 1.5 milligrams of oxygen per hour per gram of total solids (dry weight basis) at a temperature of 20 degrees Celsius.
- Alternative methods may be used, but must comply with 9 VAC 25-31-710 (Pathogen Reduction) and 9 VAC 25-31-720 (Vector Attraction Reduction).

See **Attachment I** for a list of the sludge application special condition requirements and regulatory basis.

18. **Antibacksliding Statement:** Since there are no limitations less stringent than the previous permit, the permit limits comply with the antibacksliding requirements of 9 VAC 25-31-220 L of the VPDES Permit Regulation.

19. **Compliance Schedules:** For this reissuance, no compliance schedules have been included.

20. **Special Conditions:** A brief rationale for each special condition contained in the permit is given below.

A. **Additional Total Residual Chlorine (TRC) Limitations and Monitoring Requirements (Part I.B)**

Rationale: This condition requires that the permittee monitor the TRC concentration after chlorine contact. In accordance with 40 CFR 122.41 (e) permittees are required, at all times, to properly operate and maintain all facilities and systems of treatment in order to comply with the permit. These requirements ensure proper operation of chlorination equipment to maintain adequate disinfection.

B. **Compliance Reporting under Part I.A and Part I.B (Part I.C.1)**

Rationale: In accordance with VPDES Permit Regulation, 9 VAC 25-31-190 J4 and 220I, DEQ is authorized to establish monitoring methods and procedures to compile and analyze data on water quality, as per 40 CFR Part 130, Water Quality Planning and Management, Subpart 130.4. This condition is necessary when toxic pollutants are monitored by the permittee and a maximum level of quantification and/or specific analytical method is required in order to assess compliance with a permit limit or to compare effluent quality with a numeric criterion. This condition also establishes protocols for calculation of reported values.

C. **95% Capacity Reopener (Part I.C.2)**

Rationale: This condition requires that the permittee address problems resulting from high influent flows, in a timely fashion, to avoid non-compliance and water quality problems from plant overloading. This requirement is contained in 9 VAC 25-31-200 B2 of the VPDES Permit Regulations.

D. **Indirect Dischargers (Part I.C.3)**

Rationale: This condition is required by VPDES Permit Regulation, 9 VAC 25-31-200 B1 for POTWs and PVOTWs that receive waste from someone other than the owner of the treatment works.

E. **CTC, CTO Requirement (Part I.C.4)**

Rationale: This condition is required by Code of Virginia § 62.1-44.19 and Sewage Collection and Treatment Regulations, 9 VAC 25-790 for all POTW and PVOTW permits.

F. **Operations and Maintenance Manual Requirement (Part I.C.5)**

Rationale: Submittal of the manual to DEQ for approval is required by the Code of Virginia § 62.1-44.19, Sewage Collection and Treatment Regulations, 9 VAC 25-790; and thee VPDES Permit Regulation, 9 VAC 25-31-190 E to provide an opportunity for review of current and proposed operations of the facility.

G. **Licensed Operator Requirement (Part I.C.6)**

Rationale: The VPDES Permit Regulation, 9 VAC 25-31-200 D and the Code of Virginia § 54.1-2300 et seq., Rules and Regulations for Waterworks and Wastewater Works Operators, require licensure of operators.

H. **Reliability Class (Part I.C.7)**

Rationale: A Reliability Class I has been assigned to this facility. Reliability class designations are required by Sewage Collection and Treatment Regulations, 9 VAC 25-790-70 for all municipal facilities.

I. **Sludge Reopener (Part I.C.8)**

Rationale: This condition is required by VPDES Permit Regulation, 9 VAC 25-31-220 C4 for all permits issued to treatment works treating domestic sewage.

J. **Sludge Use and Disposal (Part I.C.9)**

Rationale: VPDES Permit Regulation, 9 VAC 25-31-100 P; 220 B2; and 420 and 720, and 40 CFR Part 503 require all treatment works treating domestic sewage to submit information on sludge use and disposal practices and to meet specified standards for sludge use and disposal. Technical requirements may be derived from the VPA Permit Regulation, 5 VAC 5-32-et seq. This special condition, in accordance with Guidance Memorandum No. 97-004, clarifies that the Sludge Management Plan approved with the reissuance of this permit is an enforceable condition of the permit.

K. **Total Maximum Daily Load (TMDL) Reopener (Part I.C.10)**

Rationale: Section 303(d) of the Clean Water Act requires that Total Maximum Daily Loads (TMDLs) be developed for streams listed as impaired. This special condition is to allow the permit to be reopened if necessary to bring it into compliance with any applicable TMDL approved for the receiving stream. The reopener recognizes that, according to Section 402(o)(1) of the Clean Water Act, limits and/or conditions may be either more or less stringent than those contained in this permit. Specifically, they can be relaxed if they are the result of a TMDL, basin plan, or other wasteload allocation prepared under Section 303 of the Act.

L. **Water Quality Criteria Monitoring (Part I.C.11)**

Rationale: State Water Control Law § 62.1-44.21 authorizes the Board to request information needed to determine the discharge's impact on State waters. States are required to review data on discharges to identify actual or potential toxicity problems, or the attainment of water quality goals, according to 40 CFR Part 131, Water Quality Standards, Subpart 131.11. To ensure that water quality criteria are maintained, the permittee is required to analyze the facility's effluent for the substances noted in Attachment A of this VPDES permit.

Water quality criteria monitoring which includes organic chemicals, pesticides, PCBs, and metals will be required. This monitoring is required to provide data needed to complete the next VPDES permit reissuance application. This special condition requires that these data be collected using quantification levels low enough to evaluate whether there is a potential to exceed antidegradation wasteload allocations in the receiving stream. Laboratory data summary sheets and chain of custody sheets shall be submitted with Attachment A of the permit to document the laboratory methods used, practicable quantification levels, field collection, and preservation methods.

M. **Nutrient Management Plan Requirement (Part I.D.1)**

Rationale: Water Control Law § 62.1-44.19.3.C.8 requires that a nutrient management plan (NMP) be developed by a person certified in accordance with § 10.1-104.2 for each biosolids land application site, prior to application of biosolids at the site. The statute also establishes conditions where the NMP must be approved by the Department of Conservation and Recreation prior to submittal at the time of permit application. VPA Regulation 9 VAC 25-32-680A2, with which all biosolids operations must comply, requires that the NMP be submitted to the farmer/operator of the site, the Department of Conservation and Recreation, and the local government, unless requested in writing to not receive the NMP.

N. **14 Day Notification (Part I.D.2)**

Rationale: Water Control Law § 62.1-44.19.3L requires the permit holder to provide written notification to DEQ at least 14 days prior to land application of biosolids at a permitted site.

O. **Signage Requirements (Part I.D.3)**

Rationale: VPA Permit Regulation 9 VAC 25-32-530B, with which all biosolids operations must comply, requires a sign be posted at a land application site at least 48 hours prior to delivery of biosolids at the site. VPA Permit Regulation, 9 VAC 25-32-530C-D, specifies construction, content and maintenance of the sign.

P. **Monthly Activity Report (Part I.D.4)**

Rationale: Fee Regulation 9 VAC 25-20-147B requires submittal of a report by the 15th of the month following the month in which land application occurred. Specific information to be provided and maintenance requirements are identified in 9 VAC 25-20-147A.

Q. **Land Application Fee (Part I.D.5)**

Rationale: Water Control Law § 62.1-44.19.3.P requires that a fee be charged to the generator of biosolids to be land applied in Virginia. The fee is established by the Fee Regulation 9 VAC25-20-146 and 9 VAC 25-20-40A3. Exemptions to the fee are provided in 9 VAC 25-20-50C. VPA Permit Regulation, 9 VAC 20-60D, establishes the due date.

R. **Annual Land Application Reporting of Sewage Sludge (Part I.D.6)**

Rationale: Annual reporting of all monitoring performed in accordance with Part I.A is required annually by February 19 in accordance with 9 VAC 25-32-440B and 9 VAC 25-31-590.

S. **Certified Land Applier Requirement (Part I.D.7)**

Rationale: Water Control Law § 62.1-44.19.3.1.B. states that Class B biosolids shall not be land applied unless a certified land applicator is onsite at all times during the application.

T. **Endangered Species (Part I.D.8)**

Rationale: In accordance with 9 VAC 25-31-550, sewage sludge shall not be applied to land if it is likely to adversely affect a threatened or endangered species.

U. **Additional Land Application Sites (Part I.D.9)**

Rationale: VPA Permit Regulation 9 VAC 25-32-500, requires the submission of complete Sludge Management Plan (SMP) information. The SMP is part of the application information. This special condition requires the revised information be submitted when field are being added and that the changes be public noticed. The public notice requirement is in accordance with modification procedures for VPDES permits (9 VAC 25-31-370).

V. **Planting Schedule following Biosolids Application (Part I.D.10)**

Rationale: In accordance with VPA Permit Regulation, 9 VAC 25-32-560c(2), planting shall occur within a specific maximum timeframe following application of biosolids. The regulation specifies different spring and fall planting timeframes following land application.

W. **Slope Restrictions (Part I.D.11)**

Rationale: VPDES Permit Regulation, 9 VAC 25-31-710 B3.b, site slope restrictions including the requirement that biosolids shall not be applied to site slopes exceeding 15 percent.

X. **Transport Trucks (Part I.D.12)**

Rationale: The VPA Permit Regulation, 9 VAC 25-32-540, defines the proper transport of biosolids to prevent spills and procedures in the event of a spill.

Y. **Landowner Consent and Notice (Part I.D.13)**

Rationale: In accordance with 9 VAC 25-31-530F, landowner consent forms shall be maintained for all sites not owned by the permittee.

Z. **Site Restrictions for Land Application of Class B Sewage Sludge (Part I.D.14)**

Rationale: Sewage sludge and land application site permit limitations and monitoring are required based on the 9 VAC 25-31-710B5 and 40 CFR Part 503.

AA. **Recordkeeping Special Conditions for Land Application of Sewage Sludge (Part I.D.15)**

Rationale: In accordance with 9 VAC 25-32-440, records of pollutant concentrations and management practices shall be kept for at least five years.

BB. **Pretreatment (Part I.E)**

Rationale: VPDES Permit Regulation, 9 VAC 25-31-730 through 900, and 40 CFR Part 403 require certain existing and new sources of pollution to meet specified regulations. This facility has a conditional pretreatment program.

CC. **Toxics Management Program (Part I.F)**

Rationale: VPDES Permit Regulation, 9 VAC 25-31-210 and 220I, requires monitoring in the permit to provide for and assure compliance with all applicable requirements of the State Water Control Law and the Clean Water Act. This requirement is included because the facility has a pretreatment program. See **Attachment J** for the Toxics Management Program Justification Memorandum.

DD. **Conditions Applicable to All VPDES Permits (Part II)**

Rationale: VPDES Permit Regulation, 9 VAC 25-31-190 requires all VPDES permits to contain or specifically cite the conditions listed.

21. **Changes to the Permit:**

A. **The following special condition has been deleted from the permit:**

A Bacterial Effluent Limitations and Monitoring Requirements Special Condition (Part I.C) has been deleted because the permittee completed the requirements of the bacterial study to submit E. coli data.

B. **Special conditions that have been modified from the previous permit are listed below: (The referenced permit sections are for the new permit.)**

1. The Additional Total Residual Chlorine Limitations and Monitoring Requirements Special Condition (Part I.B) has been revised to reflect changes in Agency guidance.

2. The Operations and Maintenance Manual Special Condition (Part I.C.3) has been revised in accordance with the VPDES Permit Manual.

3. The Sludge Use and Disposal Special Condition (Part I.C.8) has been revised in accordance with the VPDES Permit Manual.

4. The Water Quality Criteria Monitoring Special Condition (Part I.C.10) has been revised to reflect changes in the VPDES Permit Manual.

5. The Land Application of Sewage Sludge Special Conditions (Part I.D) has been revised to incorporate new reporting and nutrient management plan requirements found in 9 VAC 25-32 et al.

6. The Toxics Management Program Special Condition (Part I.F) has been revised to reflect Guidance Memorandum 00-2012.

7. In accordance with the VPDES Permit Manual, boilerplate permit pages (Part II) have been revised to reflect changes in the VPDES permit regulations regarding signatory requirements.

C. **New special conditions added to the permit are listed below:**

1. The CTC, CTO Requirement Special Condition (Part I.C.4) has been added in accordance with the VPDES Permit Manual. In accordance with the Sewage Collection and Treatment Regulations, plans and specifications are to be submitted to the DEQ for review and approval to construct.

2. A Total Maximum Daily Load (TMDL) Reopener Special Condition has been added as Part I.C.10 to allow opening of the permit if necessary to comply with any applicable TMDL for the receiving stream.

D. **Permit Limits and Monitoring Requirements:** See Table III on pages 19 for details on changes to the effluent limits and monitoring requirements.

22. **Variances/Alternate Limits or Conditions:** No variances or alternate limits or conditions are included in this permit. The permittee requested that 8-hour composite analysis data for TSS and BOD_5 collected during the permit term be used in the application in lieu of composite samples. Waivers were also requested for parameters without water quality criteria. These waivers were consistent with current permit requirements, and therefore they were granted.

23. **Regulation of Treatment Works Users:** The VPDES Permit Regulation, 9 VAC 25-31-280 B9, requires that every permit issued to a treatment works owned by a person other than a state or municipality provide an explanation of the Board's decision on the regulation of users. The Town of Stuart, a municipality, owns this treatment works; therefore, this regulation does not apply. The Significant Industrial Survey required for the facility's industrial users is in Part I.E of the permit.

24. **Public Notice Information required by 9 VAC 25-31-290 D:**

All pertinent information is on file and may be inspected, and arrangements made for copying by contacting Becky L. France at:

Virginia DEQ, West Central Regional Office
3019 Peters Creek Road
Roanoke, VA 24019
540-562-6700
blfrance@deq.virginia.gov

Persons may comment in writing or by e-mail to the DEQ on the proposed permit action and may request a public hearing during the comment period. Comments shall include the name, address, and telephone number of the writer, and shall contain a complete, concise statement of the factual basis for comments. Only those comments received within this period will be considered. The DEQ may decide to hold a public hearing if public response is significant. Requests for public hearings shall state the reason why a hearing is requested, the nature of the issues proposed to be raised in the public hearing, and a brief explanation of how the requester's interests would be directly and adversely affected by the proposed permit action.

Following the comment period, the DEQ will make a determination regarding the proposed permit action. This determination will become effective, unless the DEQ grants a public hearing. Due notice of any public hearing will be given. See **Attachment K** for a copy of the public notice.

25. **303(d) Listed Segments (TMDL):** This facility discharges to the South Mayo River. The stream segment receiving the effluent is not listed on the current 303(d) list; and therefore no Total Maximum Daily Loads (TMDLs) have been or are being developed for this segment.

26. **Additional Comments:**

A. **Reduced Effluent Monitoring:** In accordance with Guidance Memorandum 98-2005, all permit applications received after May 4, 1998, are considered for reduction in effluent monitoring frequency. Only facilities having exemplary operations that consistently meet permit requirements may qualify for reduced monitoring. To qualify for consideration of reduced monitoring requirements, the facility should not have been issued any Warning Letters, Notices of Unsatisfactory Laboratory Compliance, Letter of Noncompliance (LON) or Notices of Violation (NOV), or be under any Consent Orders, Consent Decrees, Executive Compliance Agreements, or related enforcement documents during the past three years.

The facility received the following Notice of Violations within the past three years:

Notice of Violation No. W2006-05-W-0003	chlorine reporting deficiency on DMR
Notice of Violation No. W2006-04-W-0003	failure to correct operations and maintenance deficiencies noted in inspections

The facility does not meet the criteria discussed above and therefore is not eligible for reduced monitoring.

B. **Regulation of Storm Water Discharges:** VPDES Permit Regulation 9 VAC 25-31-10 defines discharges of storm water from municipal treatment plants with designed flow of 1.0 MGD or more, or plants with approved pretreatment programs, as discharges of storm water associated with industrial activity subject to permitting requirements. Stuart WWTP has an approved pretreatment program. However, the facility has submitted a no exposure form certifying that any storm water discharges are not exposed to industrial activity. Thus, industrial storm water requirements have not been incorporated into the permit.

C. **Previous Board Action:** None

D. **Staff Comments:** The discharge is not controversial. The discharge is in conformance with the existing planning document for the area. The permit is being reissued for a period of less than five years to even out the DEQ staff permit writing workload.

E. **Public Comments:** The Virginia Department of Game and Inland Fisheries (VDGIF) commented on the permit reissuance. They recommended that the treatment for the discharge be upgraded to ultraviolet or ozone disinfection alternatives. Since the facility has dechlorination following chlorination, an alternative disinfection method was not deemed necessary. See **Attachment E** for a copy of the VDGIF comments.

During the public notice period changes were made to the Land Application of Sewage Sludge (Part I.D) special conditions. These special conditions were removed that were duplicated in the Division of Conservation and Recreation's July 2008 Nutrient Management Plan special condition template. Also, the soil monitoring frequency was revised from 1/Application to 1/ 3 years to be consistent with NMP requirements. The NMP Requirement Special Condition (Part I.D.1) was revised to specify when Division of Conservation and Recreation approval is required. The special condition that restricted the application rate to 15.0 dry tons per acre per three years was deleted because application rates are covered in the NMP, and this requirement may be inconsistent with the NMP.

F. **Tables:**

Table I	Discharge Description (Page 2)
Table II	Basis for Monitoring Requirements (Page 18)
Table III	Permit Processing Change Sheet (Page 19)

G. **Attachments:**

A. Flow Frequency Information
B. Wastewater Schematics
C. Site Inspection Report
D. USGS Topographic Map
E. Ambient Water Quality Information

- STORET Data (Station 4ASMR033.98)
- Integrated 2002 Water Quality Assessment (Excerpt)
- Roanoke River Basin Comprehensive Water Resources Plan (Excerpt)
- Endangered Species Information

F. Effluent Data

G. Wasteload and Limit Calculations

- Mixing Zone Output (MIXER)
- Wasteload Allocation Spreadsheet
- STATS Program Results

H. Regional Water Quality Model

I. Sewage Sludge Data

J. Toxics Management Program Justification Memorandum

K. Public Notice

L. EPA Checksheet

Table II
BASIS FOR LIMITATIONS – MUNICIPAL

( ) Interim Limitations
(x) Final Limitations

OUTFALL: 001
DESIGN CAPACITY: 0.60 MGD

Effective Dates - From: Effective Date
To: Expiration Date

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITS				MONITORING REQUIREMENTS	
		Monthly Average	Weekly Average	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	NA	NA	NL	Continuous	Recorded
pH (Standard Units)	1,2	NA	NA	6.0	9.0	1/Day	Grab
BOD_5	3	28 mg/L 63 kg/d	42 mg/L 95 kg/d	NA	NA	3 Days/Week	8 HC
Total Suspended Solids	1	30 mg/L 68 kg/d	45 mg/L 102 kg/d	NA	NA	3 Days/Week	8 HC
Temperature	2	NA	NA	NA	NL °C	1/Day	Grab
Total Residual Chlorine	2	0.069 mg/L	0.084mg/L	NA	NA	1/Day	Grab

NA = Not Applicable
NL = No Limitations; monitoring only
8HC= 8 hour composite

The basis for the limitations codes are:

1. Federal Technology-Based Secondary Treatment Regulation (40 CFR Part 133)
2. Water Quality Criteria
3. Roanoke River Water Quality Management Plan
4. Regional Water Quality Model

Table III
PERMIT PROCESSING CHANGE SHEET

LIMITS AND MONITORING SCHEDULE:

Outfall No.	Parameter Changed	Monitoring Requirement Changed		Effluent Limits Changed		Reason for Change	Date
		From	To	From	To		
001	Temperature	NA	1/Day	NA	NL °C	Effluent temperature monitoring required to provide data used in calculation of wasteload allocations and water quality model.	7/1/08
001	BOD_5			28 mg/L (63.5 kg/d) monthly average and 42 mg/L (95.3 kg/d) maximum weekly average	28 mg/L (63 kg/d) monthly average and 42 mg/L (95 kg/d) maximum weekly average	The loading limits were rewritten in whole numbers in accordance with Guidance Memorandum 06-2016 which specifies that loading limits should be listed in whole numbers. To avoid backsliding the numbers were rounded down.	7/1/08
001	TSS			30 mg/L (68.1 kg/d) monthly average and 45 mg/L (102.1 kg/d) maximum weekly average	30 mg/L (68 kg/d) monthly average and 45 mg/L (102 kg/d) maximum weekly average	The loading limits were rewritten in whole numbers in accordance with Guidance Memorandum 06-2016 which specifies that loading limits should be listed in whole numbers. To avoid backsliding the numbers were rounded down.	7/1/08
001	Total Residual Chlorine			0.10 mg/L monthly average and 0.12 mg/L maximum weekly average	0.069 mg/L monthly average and 0.084 mg/L maximum weekly average	STATS program determined that more stringent limits were needed to protect water quality of the receiving stream.	7/1/08

Attachment A

Flow Frequency Memorandum

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY - WATER DIVISION
3019 Peters Creek Road Roanoke, Virginia 24019

SUBJECT: Flow Frequency Determination
Town of Stuart WWTP – Reissuance (VA0022985)

TO: Permit File

FROM: Becky L. France, Environmental Engineer Senior

DATE: April 4, 2008

COPIES:

The Town of Stuart WWTP to the South Mayo River near Stuart, Virginia. Stream flow frequencies are required at this site for use in developing effluent limitations for the VPDES permit.

The USGS has operated a continuous record gauge on the South Mayo River near Nettleridge, Virginia (#02069700) since 1963. The gauge is located at the Route 700 bridge near Nettleridge, Virginia 14.69 river miles downstream of the discharge point. The flow frequencies for the gauge are based on the period from 1963 through 2003. The values at the discharge point were determined by drainage area proportions. The design flow of 0.60 MGD from the Town of Stuart WWTP was subtracted from the resulting flows to calculate the flow upstream of outfall 001.

The high flow months are January through June. Flow frequencies are listed on the attached table.

Flow Frequency Determination: Town of Stuart WWTP

Reference Gauge (data from 1963 to 2003) South Mayo River near Nettleridge, VA(#02069700) Drainage Area [mi^2] = 85					
	ft^3/s	MGD		ft^3/s	MGD
1Q10 =	22	14	High Flow 1Q10 =	35	23
7Q10 =	24	16	High Flow 7Q10 =	39	25
30Q5 =	37	24	HM =	82	53
30Q10=	31	20	High Flow 3010=	50	32

Flow frequencies for the reissued permit (3/4/2008) Roanoke River at Discharge Point Drainage Area [mi^2] = 34.9					
	ft^3/s	**MGD**		**ft^3/s**	**MGD**
1Q10 =	**8**	**5.5**	**High Flow 1Q10 =**	**14**	**8.9**
7Q10 =	**9.3**	**6.0**	**High Flow 7Q10 =**	**15**	**10**
30Q5 =	**14.7**	**9.5**	**HM =**	**33**	**21**
30Q10=	**12.2**	**7.9**	**High Flow 30Q10=**	**20**	**13**

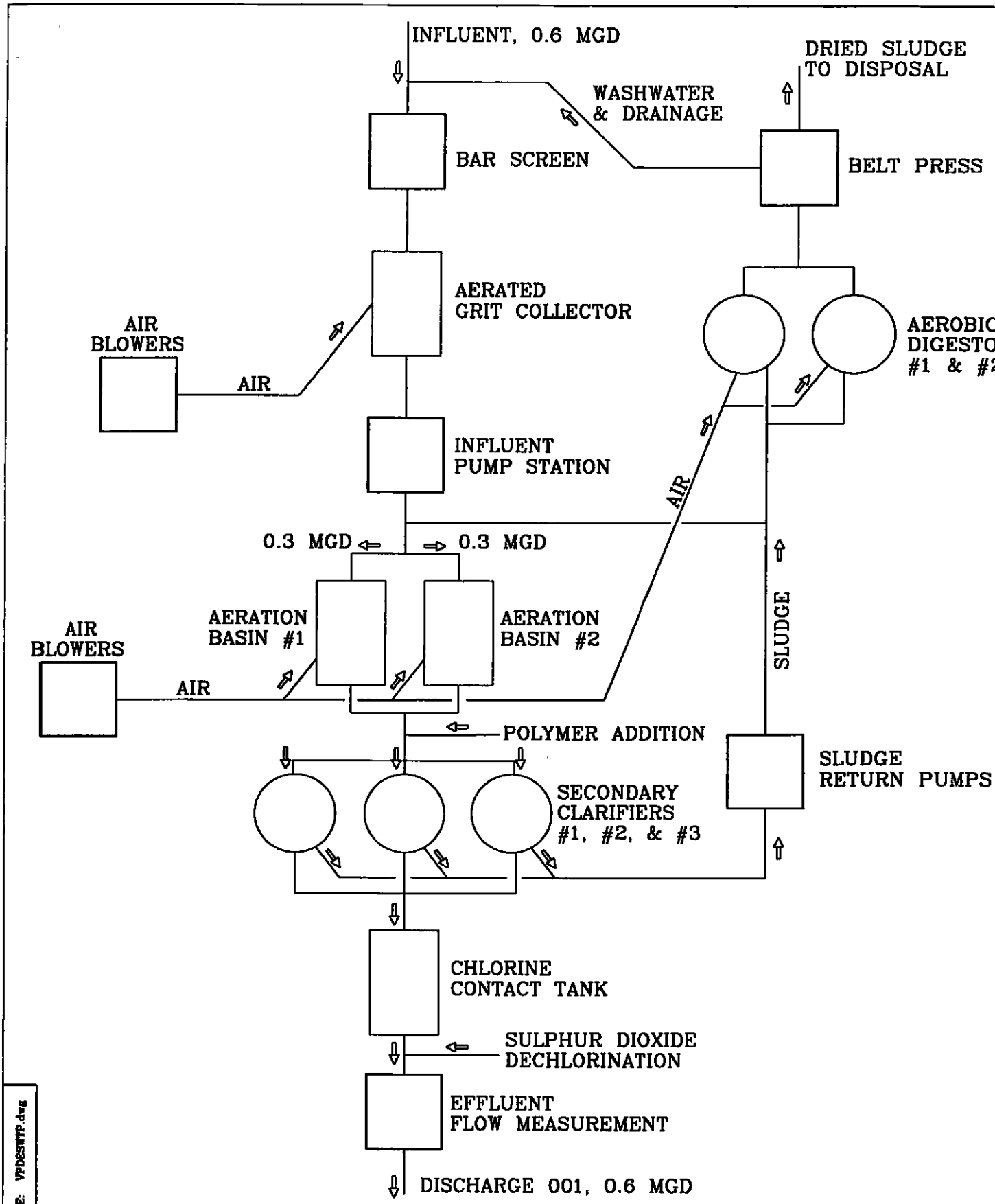
Town of Stuart WWTP design flow 0.6 MGD

Gauge No. 02069700
Lat 36 34'15", Long 80 07'46", NAD 83
South Mayo River near Nettleridge, Va.
Nettleridge Quad (Patrick County)

Record-	DAArea	Harmean	HF30Q10	HF7Q10	HF1Q10	Z30Q5	Z30Q10	Z7Q10	Z1Q10	Z1Q30	HFmths	StatPeriod	Yrstm
R, 1963-	84.6	82	50	39	35	37	31	24	22	15	JAN-JUN	1963-2003	2005

Attachment B

Wastewater Schematics



FILENAME: VPDESWTP.dwg

ADAMS-HEATH ENGINEERING, INC.
CIVIL - ENVIRONMENTAL
Tel: (276)236-4588 Fax: (276)236-0458
119 North Main Street
Galax, Virginia 24333

TREATMENT SCHEMATIC
VPDES PERMIT APPLICATION
TOWN OF STUART, VIRGINIA

FIGURE 2
NO SCALE

Attachment C

Site Inspection Report

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY
West Central Regional Office

3019 Peters Creek Road Roanoke, VA 24019

SUBJECT: Site Inspection Report for Town of Stuart WWTP
Reissuance of VPDES Permit No. VA0022985

TO: Permit File

FROM: Becky L. France, Environmental Engineer Senior

CC: Samuel C. Hale, Environmental Inspector Supervisor

DATE: January 9, 2008

On January 8, 2008, I conducted a site inspection of the Stuart WWTP which is located in the Town of Stuart. Mr. Pete Slate, operator, was present at the inspection.

Familiarization with Plant Operations

The facility is a 0.60 MGD extended aeration activated sludge treatment facility. Because there are two Significant Industrial Users, an elastic fabrics manufacturer and an engraved plate manufacturer, the facility operates a conditional pretreatment program. The facility's treatment system consists of screening, activated sludge aeration, secondary clarification, chlorine disinfection, dechlorination, sludge digestion, and thickening.

Wastewater flows through a bar screen into an aerated grit chamber. Grit is removed to a sump for dewatering. A drain located around the grit chamber drains any contaminated storm water to the treatment works. At the time of the site visit there was a large accumulation of grease at the headworks. From the grit chamber, the wastewater is pumped to two parallel aeration basins. At the time of the site visit, the wastewater in the aeration basins was a black color and had an "industrial odor", probably due to the influent from industrial dischargers. Mr. Slate believed the plant had experienced an upset over the weekend. There was a large amount of foam in the aeration basins. The wastewater from the aeration basins flows into three parallel secondary clarifiers. At the time of the site visit, there was also some foam in the secondary clarifiers. Sludge from the clarifiers is routed to two digesters. From the secondary clarifiers, the wastewater overflows the weirs, and chlorine gas is added as it enters the baffled chlorine contact basin. The wastewater is dechlorinated with sulfur dioxide prior to discharge through an eight-inch cast iron pipe to the South Mayo River. At the time of the site visit, the discharge appeared clear with no foam.

Sludge that is collected in the clarifiers is pumped to two aerated aerobic digesters. Periodically, sludge from the digesters is pumped and polymer is added to thicken it. Then the sludge is dewatered with a belt press. The facility has an on-site storage building to store sludge prior to land application. The concrete floor is equipped with a drain line which collects any seepage from the sludge and conveys it back to the plant influent for treatment. In the event that the sludge storage building is full, sludge is stored on three on-site sludge drying beds, which are located outside of the sludge belt press building. These beds are uncovered. The drying beds have an underdrain system to collect any seepage from the sludge.

Attachment D

USGS Topographic Map

EXCERPT FROM THE USGS STUART QUADRANGLE

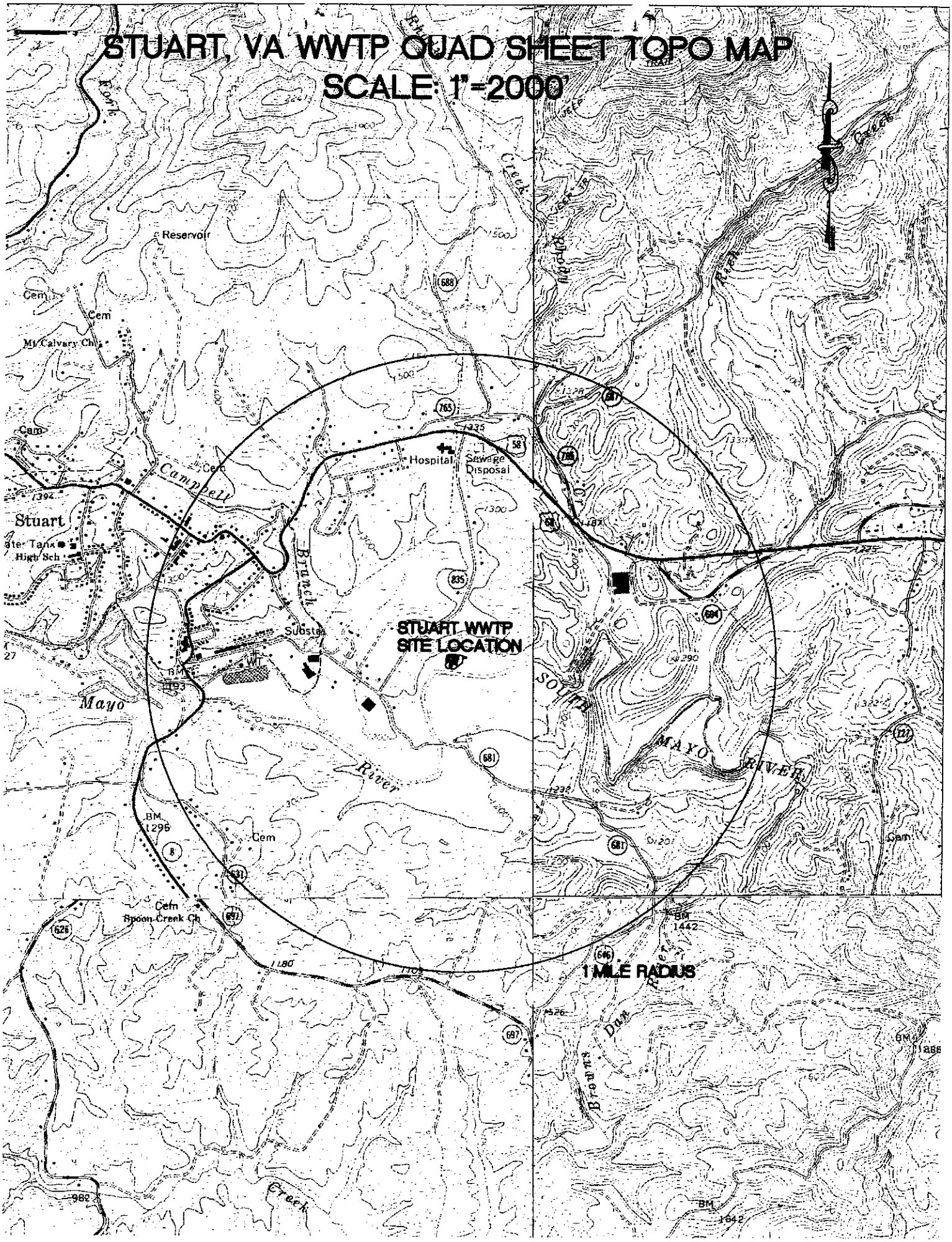
ADAMS-HEATH ENGINEERING, INC.
CIVIL - ENVIRONMENTAL
119 North Main Street
Galax, Virginia 24333
Tel: (540)236-4588 Fax: (540)236-0458

GENERAL VICINITY MAP
VPDES PERMIT APPLICATION
TOWN OF STUART, VIRGINIA

FIGURE 1

SCALE: 1" = 1000'

STUART, VA WWTP QUAD SHEET TOPO MAP
SCALE: 1"=2000'



Attachment E

Ambient Water Quality Information

- **STORET Data (Station 4ASMR033.98)**
- **Integrated 2004 Water Quality Assessment (Excerpt)**
- **Roanoke River Basin Comprehensive Water Resources Plan (Excerpt)**
- **Endangered Species Information**

STORET Station No. 4ASMR033.98 South Mayo River (State Road 787 bridge)
Watershed ID: VAW-L43R

Collection Date Time	Temp Celsius	Do Probe	Field pH S.U.	Fecal Coliform, MEMBR FILTER	E. Coli - MTEC-MF N0/100ML
1/8/1997 13:30	4.6	13.1	8.3	<100	
4/2/1997 13:00	11.5	10.1	8	<100	
7/8/1997 13:00	18.2	8.5	7.7	500	
10/20/1997 13:00	11.3	9.2	7.5	<100	
1/12/1998 12:00	7.7	9.9	7.5	300	
4/7/1998 15:05	16	9	8.7	NULL	
4/14/1998 13:00	11.7	9.4	7.9	600	
7/20/1998 13:30	21.7	8	8	400	
10/27/1998 13:30	12.4	9.4	7.4	100	
1/12/1999 13:00	4.2	12.4	7.3	500	
4/5/1999 13:30	13.6	9	7.8	100	
7/14/1999 13:30	17.8	8.3	8.4	600	
11/18/1999 13:00	7.5	10.2	7.8	200	
1/13/2000 13:00	8.3	9.2	7.9	100	
3/8/2000 13:00	14.2	9.7	7.3	100	
5/4/2000 13:00	17.2	9.2		<100	
8/28/2001 14:00	21.5	8.1	8.3	1200	
10/17/2001 13:30	10.4	9	7.35	<100	
12/4/2001 13:30	7.9	9.8	7.7	<100	
2/21/2002 13:00	9.8	11.3	7.5	<100	
5/23/2002 13:00	14.9	10	8.7	<100	
6/19/2002 11:45	20	8.9	8.33	200	
8/6/2002 13:15	24.9	7.98	8	300	
10/29/2002 13:20	11.1	10.09	6.64	900	
12/17/2002 12:45	6.4	12.08	7.66	200	
2/13/2003 13:00	3.1	12.7	7.6	<100	
4/16/2003 12:30	15	10.2	7.5	<100	
6/25/2003 13:30	17.5	9.4	7.3	100	
2/21/2007 15:00	10.1	11.9	7.4	50	25
4/12/2007 15:00	14.8	9.5	8	50	<25
6/20/2007 14:30	20.8	8.5	6.6	720	420
8/2/2007 15:30	21.6	8	6.7	180	120
10/18/2007 14:30	17.3	NULL	6.4	200	100
12/18/2007 14:00	3.3	14.1	9.1	NULL	<25
2/28/2008 15:30	5.6	12.2	7	NULL	25
4/9/2008 14:00	13.2	9.7	7.5	NULL	25

90th Percentile pH	8.4	S.U.
10th Percentile pH	6.8	S.U.
Temperature °C	21.2	90th Percentile
Temperature °C	18	90th Percentile January - June

STORET Station No. 4ASMR033.98 South Mayo River (State Road 787 bridge)
Watershed ID: VAW-L43R

Collection Date Time	Hardness, Total (mg/L as $CaCO_3$)
1/16/1990 11:00	14
4/9/1990 11:00	12
7/11/1990 11:00	10
10/22/1990 12:30	13
1/14/1991 12:00	18
10/22/1991 11:00	26
4/7/1992 14:00	18
7/15/1992 11:00	14
10/19/1992 11:30	20
1/25/1993 11:00	14
4/14/1993 11:00	12
7/15/1993 11:00	14
10/27/1993 10:30	22
1/24/1994 12:00	10
7/13/1994 11:00	11
10/18/1994 11:00	12
1/24/1995 11:00	8
4/10/1995 11:00	13
7/17/1995 12:00	15
10/5/1995 11:30	40
1/17/1996 10:30	11
4/3/1996 12:00	11
7/15/1996 11:30	20
11/26/1996 13:00	12
1/8/1997 13:30	11
4/2/1997 13:00	6.7
7/8/1997 13:00	11.5
10/20/1997 13:00	11.1
1/12/1998 12:00	13.1
4/14/1998 13:00	20
7/20/1998 13:30	23.5
10/27/1998 13:30	14
1/12/1999 13:00	10
4/5/1999 13:30	20
7/14/1999 13:30	15.7
11/18/1999 13:00	12
1/13/2000 13:00	18.1
3/8/2000 13:00	14
5/4/2000 13:00	8
8/28/2001 14:00	8.4
10/17/2001 13:30	10.2
12/4/2001 13:30	17.3
2/21/2002 13:00	13
5/23/2002 13:00	24.7
6/19/2002 11:45	17
8/6/2002 13:15	20.6
10/29/2002 13:20	26.6
12/17/2002 12:45	17.9
2/13/2003 13:00	16.7
4/16/2003 12:30	10.4
6/25/2003 13:30	10

mean	15	mg/L

use default 25 mg/L for wasteload allocation spreadsheet

2004 Use Attainment by Assessment Units (AU)

Watershed ID: VAW-L43R

Total Watershed Size: 118.9 M

AU ID: **VAW-L43R_ZZZ01A00** **47.61** M *AU Overall Category:* **3A**

LOCATION: Remaining waters in watershed L43R.

State TMDL ID	Use	WOS Attainment	303(d) Impairment Initial List Year
	Aquatic Life	Not Assessed	
	Fish Consumption	Not Assessed	
	Recreation	Not Assessed	
	Wildlife	Not Assessed	

WQS Class III Sec 4 None No current data. These waters are not assessed. No VDH fish consumption advisory.

AU ID: **VAW-L43R_SNF02A04** **2.14** M *AU Overall Category:* **2A**

LOCATION: North Fork South Mayo River mainstem from its headwaters (36°43'05" / 80°17'54") downstream to below the Route 640 crossing and upstream of the Bull Mountain Fork confluence (36°41'22" / 80°17'09").

State TMDL ID	Use	WOS Attainment	303(d) Impairment Initial List Year
	Aquatic Life	Fully Supporting	
	Fish Consumption	Not Assessed	
	Recreation	Fully Supporting	
	Wildlife	Fully Supporting	

WQS Class VI Sec 4 None
Assessment basis: DEQ station 4ASNF007.64 (FPM- VAEQ99-051). 4ASNF007.64- a probabilistic site. No exceedances of WQS criterion for FC, DO, Temp, pH or NH3-N. One of one Escherichia coli (E. coli) sample did not exceed but is insufficient to assess. No excursions of PEC SVs for sediment or the TP SV. One of one chlorophyll a sample did not exceed the SV and is also insufficient to assess. Overall the assessment unit Fully Supports. No VDH fish consumption advisory.

AU ID: **VAW-L43R_SNF01A02** **12.86** M *AU Overall Category:* **3A**

LOCATION: North Fork South Mayo River mainstem and tributaries from its confluence with the South Mayo River upstream to its headwaters.

State TMDL ID	Use	WOS Attainment	303(d) Impairment Initial List Year
	Aquatic Life	Not Assessed	
	Fish Consumption	Not Assessed	
	Recreation	Not Assessed	
	Wildlife	Not Assessed	

WQS Class VI Sec 4 None No current data. These waters are not assessed. No VDH fish consumption advisory.

AU ID: **VAW-L43R_SMR30A00** **4.25** M *AU Overall Category:* **3A**

LOCATION: Headwater tributaries in WQS section 4 not designated PWS in Watershed L43R.

State TMDL ID	Use	WOS Attainment	303(d) Impairment Initial List Year
	Aquatic Life	Not Assessed	
	Fish Consumption	Not Assessed	
	Recreation	Not Assessed	
	Wildlife	Not Assessed	

WQS Class VI Sec 4 None No current data. These waters are not assessed. No VDH fish consumption advisory.

AU ID: **VAW-L43R_SMR20A00** **5.86** M *AU Overall Category:* **3A**

LOCATION: Remainder of Wilson Creek and tributaries in WQS sec. 3h in Watershed L43R.

State TMDL ID	*Use*	*WOS Attainment*	*303(d) Impairment Initial List Year*
	Aquatic Life	**Not Assessed**	
	Fish Consumption	**Not Assessed**	
	Public Water Supply	**Not Assessed**	
	Recreation	**Not Assessed**	
	Wildlife	**Not Assessed**	

WQS Class VI Sec 3h PWS No current data. These waters are not assessed. No VDH fish consumption or drinking water advisories.

AU ID: **VAW-L43R_SMR07A00** **2.67** M *AU Overall Category:* **3A**

LOCATION: South Mayo River mainstem from its perennial headwaters downstream to near but upstream of the Wilson Creek mouth.

State TMDL ID	*Use*	*WOS Attainment*	*303(d) Impairment Initial List Year*
	Aquatic Life	**Not Assessed**	
	Fish Consumption	**Not Assessed**	
	Recreation	**Not Assessed**	
	Wildlife	**Not Assessed**	

WQS Class VI Sec 3g None No current data. These waters are not assessed. No VDH fish consumption advisory.

AU ID: **VAW-L43R_SMR06A00** **4.46** M *AU Overall Category:* **5D**

LOCATION: South Mayo River mainstem from upstream of the Wilson Creek mouth downstream to the end of the WQS natural trout section located just upstream of the Town of Stuart water intake.

State TMDL ID	*Use*	*WOS Attainment*	*303(d) Impairment Initial List Year*
VAW-L43R-01	**Aquatic Life**	**Not Supporting**	
	303(d) Parameter:	**Temperature, water**	**2004**
	Fish Consumption	**Not Assessed**	
	Public Water Supply	**Fully Supporting**	
VAW-L43R-01	**Recreation**	**Not Supporting**	
	303(d) Parameter:	**Total Fecal Coliform**	**2004**
	Wildlife	**Fully Supporting**	

WQS Class VI Sec 3h PWS
Assessment basis: DEQ station 4ASMR033.98 (AQ- 1999 Consent Decree Attachment B station for FC; not listed in 2002). The South Mayo River Bacteria TMDL Flow Duration Study with load allocations is complete. U.S. EPA approved the study on 02/27/2004 (Category 4A for Bacteria). The TMDL Study and allocations can be viewed at http://www.deq.state.va.us. The 2004 temperature impairment, described below, is not addressed by the EPA approved Bacteria TMDL Study. Stream Flow Conditions [9 VAC 25-260-50 Numerical criteria for dissolved oxygen, pH and maximum temperature***]. Total measurements at 4ASMR033.98-DO/Temp 21, pH 20. 02069700 South Mayo R. - Nettleridge <7Q10 of 28 cfs @ gage on 6/19/02 (23 cfs) and 8/06/02 (14 cfs). One Temp Exceedance 8/06/02 (24.9°C) [Class VI criterion 20°C] and remainder Fully Supporting field measurements excluded from the dataset. 4ASMR033.98- FC exceeds the 400 cfu/100 ml instantaneous criterion in five of 20 samples. Exceeding values range from 500 to 1200 cfu/100 ml. Category 4A for bacteria with TMDL Study completion. Two of 19 temperature measurements exceed the Class VI natural trout water criterion of 20°C- Category 5D. Each exceedance is 22°C occuring on 07/20/1998 and 08/28/2001. No excursions of the sediment PEC SVs are found. DO, Temp, pH, TP, chlorophyll a, water column metals and NH3-N each Fully Support. No VDH fish consumption advisory.

2004 Use Attainment by Assessment Units (AU)

AU ID: **VAW-L43R_SMR05A00** **0.49** M *AU Overall Category:* **4A**

LOCATION: South Mayo River mainstem from the WQS natural trout section just upstream of the Stuart water intake downstream to the Town of Stuart intake.

State TMDL ID	*Use*	*WOS Attainment*	*303(d) Impairment Initial List Year*
	Aquatic Life	Fully Supporting	
	Fish Consumption	Not Assessed	
	Public Water Supply	Fully Supporting	
VAW-L43R-01	Recreation	Not Supporting	
	303(d) Parameter:	Total Fecal Coliform	2004
	Wildlife	Fully Supporting	

WQS Class IV Sec 3h PWS
Assessment basis: DEQ station 4ASMR033.98 (AQ- 1999 Consent Decree Attachment B station for FC; not listed in 2002). The South Mayo River Bacteria TMDL Flow Duration Study with load allocations is complete. U.S. EPA approved the study on 02/27/2004 (Category 4A for Bacteria). The TMDL Study and allocations can be viewed at http://www.deq.state.va.us. Stream Flow Conditions [9 VAC 25-260-50 Numerical criteria for dissolved oxygen, pH and maximum temperature***]. Total measurements at 4ASMR033.98- DO/Temp 21, pH 20. 02069700 South Mayo R. - Nettleridge <7Q10 of 28 cfs @ gage on 6/19/02 (23 cfs) and 8/06/02 (14 cfs). Fully Supporting field measurement sets excluded from the dataset. 4ASMR033.98- FC exceeds the 400 cfu/100 ml instantaneous criterion in five of 20 samples. Exceeding values range from 500 to 1200 cfu/100 ml. No excursions of the sediment PEC SVs are found. DO, Temp, pH, TP, chlorophyll a, water column metals and NH3-N each Fully Support. No VDH fish consumption advisory.

AU ID: **VAW-L43R_SMR04A00** **0.40** M *AU Overall Category:* **4A**

LOCATION: South Mayo River mainstem from the Town of Stuart water intake downstream to the North Fork South Mayo River confluence.

State TMDL ID	*Use*	*WOS Attainment*	*303(d) Impairment Initial List Year*
	Aquatic Life	Fully Supporting	
	Fish Consumption	Not Assessed	
VAW-L43R-01	Recreation	Not Supporting	
	303(d) Parameter:	Total Fecal Coliform	2004
	Wildlife	Fully Supporting	

WQS Class IV Sec 3g None
Assessment basis: DEQ stations 4ASMR033.98 (AQ- 1999 Consent Decree Attachment B station for FC; not listed in 2002) and 4ASMR027.44 (AQ). The South Mayo River Bacteria TMDL Flow Duration Study with load allocations is complete. U.S. EPA approved the study on 02/27/2004 (Category 4A for Bacteria). The TMDL Study and allocations can be viewed at http://www.deq.state.va.us. Stream Flow Conditions [9 VAC 25-260-50 Numerical criteria for dissolved oxygen, pH and maximum temperature***]. Total measurements at 4ASMR033.98- DO/Temp 21, pH 20. 02069700 South Mayo R. - Nettleridge <7Q10 of 28 cfs @ gage on 6/19/02 (23 cfs) and 8/06/02 (14 cfs). Fully Supporting field measurement sets excluded from the dataset. 4ASMR033.98- FC exceeds the 400 cfu/100 ml instantaneous criterion in five of 20 samples. Exceeding values range from 500 to 1200 cfu/100 ml. No excursions of the sediment PEC SVs are found. DO, Temp, pH, TP, chlorophyll a water column metals and NH3-N each Fully Support. No VDH fish consumption advisory.

AU ID: **VAW-L43R_SMR03B02** **2.26** M *AU Overall Category:* **4A**

LOCATION: South Fork Mayo River mainstem from the confluence of the North Fork South Mayo River downstream to the Town of Stuart POTW.

State TMDL ID	*Use*	*WOS Attainment*	*303(d) Impairment Initial List Year*
	Aquatic Life	Fully Supporting	
	Fish Consumption	Not Assessed	
VAW-L43R-01	Recreation	Not Supporting	
	303(d) Parameter:	Total Fecal Coliform	2004
	Wildlife	Fully Supporting	

WQS Class IV Sec 3g None
Assessment basis: DEQ stations 4ASMR033.98 (AQ- 1999 Consent Decree Attachment B station for FC; not listed in 2002) and 4ASMR027.44 (AQ). The South Mayo River Bacteria TMDL Flow Duration Study with load allocations is complete. U.S. EPA approved the study on 02/27/2004 (Category 4A for Bacteria). The TMDL Study and allocations can be viewed at http://www.deq.state.va.us. Stream Flow Conditions [9 VAC 25-260-50 Numerical criteria for dissolved oxygen, pH and maximum temperature***]. Total measurements at 4ASMR033.98- DO/Temp 21, pH 20. 02069700 South Mayo R. - Nettleridge <7Q10 of 28 cfs @ gage on 6/19/02 (23 cfs) and 8/06/02 (14 cfs). Fully Supporting field measurement sets excluded from the dataset. 4ASMR033.98- FC exceeds the 400 cfu/100 ml instantaneous criterion in five of 20 samples. Exceeding values range from 500 to 1200 cfu/100 ml. DO, Temp, pH and chlorophyll a each Fully Support. Stream Flow Conditions [9 VAC 25-260-50 Numerical criteria for dissolved oxygen, pH and maximum temperature***]. Total measurements 9 at 4ASMR027.44. Daily Mean Flow; 02069700 South Mayo R. - Nettleridge <7Q10 of 28 cfs @ gage on 6/19/02 (23 cfs) and 8/06/02 (14 cfs). Two Fully Supporting field measurement sets excluded from the dataset. 4ASMR027.44- Two of nine FC samples exceed the 400 cfu/100 ml instantaneous criterion at 1400 and 1700 cfu/100 ml. DO, Temp, pH, chlorophyll a and NH3-N each Fully Support. No VDH fish consumption advisory.

AU ID: **VAW-L43R_SMR03A02** **4.39** M *AU Overall Category:* **4A**

LOCATION: South Mayo River mainstem from the Town of Stuart POTW downstream to the confluence of Anglin Branch.

State TMDL ID	*Use*	*WOS Attainment*	*303(d) Impairment Initial List Year*
	Aquatic Life	**Fully Supporting**	
	Fish Consumption	**Not Assessed**	
VAW-L43R-01	**Recreation**	**Not Supporting**	
	303(d) Parameter:	**Total Fecal Coliform**	**2004**
	Wildlife	**Fully Supporting**	

WQS Class IV Sec 3g None
Assessment basis: DEQ station 4ASMR027.44 (AQ). The South Mayo River Bacteria TMDL Flow Duration Study with load allocations is complete. U.S. EPA approved the study on 02/27/2004 (Category 4A for Bacteria). The TMDL Study and allocations can be viewed at http://www.deq.state.va.us. Stream Flow Conditions [9 VAC 25-260-50 Numerical criteria for dissolved oxygen, pH and maximum temperature***]. Total measurements 9 at 4ASMR027.44. Daily Mean Flow; 02069700 South Mayo R. - Nettleridge <7Q10 of 28 cfs @ gage on 6/19/02 (23 cfs) and 8/06/02 (14 cfs). Two Fully Supporting field measurement sets excluded from the dataset. 4ASMR027.44- Two of nine FC samples exceed the 400 cfu/100 ml instantaneous criterion at 1400 and 1700 cfu/100 ml. DO, Temp, pH, chlorophyll a and NH3-N each Fully Support. No VDH fish consumption advisory.

AU ID: **VAW-L43R_SMR02A02** **8.02** M *AU Overall Category:* **4A**

LOCATION: South Mayo River mainstem from the Anglin Branch confluence downstream to the Russell Creek confluence on the South Mayo River.

State TMDL ID	*Use*	*WOS Attainment*	*303(d) Impairment Initial List Year*
	Aquatic Life	**Fully Supporting**	
	Fish Consumption	**Not Assessed**	
VAW-L43R-01	**Recreation**	**Not Supporting**	
	303(d) Parameter:	**Total Fecal Coliform**	**2004**
	Wildlife	**Fully Supporting**	

WQS Class IV Sec 3g None
Assessment basis: DEQ station 4ASMR027.44 (AQ). The South Mayo River Bacteria TMDL Flow Duration Study with load allocations is complete. U.S. EPA approved the study on 02/27/2004 (Category 4A for Bacteria). The TMDL Study and allocations can be viewed at http://www.deq.state.va.us. Stream Flow Conditions [9 VAC 25-260-50 Numerical criteria for dissolved oxygen, pH and maximum temperature***]. Total measurements 9 at 4ASMR027.44. Daily Mean Flow; 02069700 South Mayo R. - Nettleridge <7Q10 of 28 cfs @ gage on 6/19/02 (23 cfs) and 8/06/02 (14 cfs). Two Fully Supporting field measurement sets excluded from the dataset. 4ASMR027.44- Two of nine FC samples exceed the 400 cfu/100 ml instantaneous criterion at 1400 and 1700 cfu/100 ml. DO, Temp, pH, chlorophyll a and NH3-N each Fully Support. No VDH fish consumption advisory.

AU ID: **VAW-L43R_SMR01A00** **5.77** M *AU Overall Category:* **4A**

LOCATION: South Mayo River mainstem from the Russell Creek mouth downstream to the Spoon Creek confluence.

State TMDL ID	*Use*	*WOS Attainment*	*303(d) Impairment Initial List Year*
	Aquatic Life	**Fully Supporting**	
	Fish Consumption	**Not Assessed**	
VAW-L43R-01	**Recreation**	**Not Supporting**	
	303(d) Parameter:	**Total Fecal Coliform**	**1998**
	Wildlife	**Fully Supporting**	

WQS Class IV Sec 3g None
Assessment basis: DEQ station 4ASMR016.09. The South Mayo River Bacteria TMDL Flow Duration Study with load allocations is complete. U.S. EPA approved the study on 02/27/2004 (Category 4A for Bacteria). The TMDL Study and allocations can be viewed at http://www.deq.state.va.us. Stream Flow Conditions [9 VAC 25-260-50 Numerical criteria for dissolved oxygen, pH and maximum temperature***]. Total field measurements at 4ASMR016.09- DO/Temp 26, pH 25. Daily Mean Flow; 02069700 South Mayo R. - Nettleridge <7Q10 of 28 cfs @ gage on 6/19/02 (23 cfs) and 8/06/02 (14 cfs). One Temp Exceedance 8/06/02 (31.1°C) and remainder Fully Supporting field measurements excluded from the dataset. 4ASMR016.09- FC exceeds the 400 cfu/100 ml instantaneous criterion in five of 26 samples. The exceeding values range from 500 cfu/100 ml to greater than 16,000. One of three Escherichia coli (E. coli) samples exceed the 235 cfu/100 ml instantaneous criterion at greater than 800 cfu/100 ml but is insufficient to assess. One TP exceedance of the 0.20 mg/l SV occurs from 26 samples. The exceedance is 0.71 mg/l. TP still Fully Supports. No excursions of the sediment PEC SVs are found. DO, Temp, pH, chlorophyll a and NH3-N each Fully Support. No VDH fish consumption advisory.

AU ID: **VAW-L43R_RHY01A02** **4.25** M *AU Overall Category:* **3A**

LOCATION: Rhody Creek mainstem and tributaries from its confluence with the South Mayo River upstream to its headwaters.

State TMDL ID	*Use*	*WOS Attainment*	*303(d) Impairment Initial List Year*
	Aquatic Life	Not Assessed	
	Fish Consumption	Not Assessed	
	Recreation	Not Assessed	
	Wildlife	Not Assessed	

WQS Class VI Sec 4 None No current data. These waters are not assessed. No VDH fish consumption advisory.

AU ID: **VAW-L43R_RCH02A02** **3.71** M *AU Overall Category:* **3A**

LOCATION: Rich Creek mainstem and tributaries from the Rt. 58 Bridge upstream to its headwaters.

State TMDL ID	*Use*	*WOS Attainment*	*303(d) Impairment Initial List Year*
	Aquatic Life	Not Assessed	
	Fish Consumption	Not Assessed	
	Recreation	Not Assessed	
	Wildlife	Not Assessed	

WQS Class VI Sec 4 None No current data. These waters are not assessed. No VDH fish consumption advisory.

AU ID: **VAW-L43R_RCH01A02** **0.64** M *AU Overall Category:* **3A**

LOCATION: Rich Creek mainstem and tributaries from its confluence with the South Mayo River upstream to the Rt. 58 Bridge.

State TMDL ID	*Use*	*WOS Attainment*	*303(d) Impairment Initial List Year*
	Aquatic Life	Not Assessed	
	Fish Consumption	Not Assessed	
	Recreation	Not Assessed	
	Wildlife	Not Assessed	

WQS Class IV Sec 4 None No current data. These waters are not assessed. No VDH fish consumption advisory.

AU ID: **VAW-L43R_POO02A02** **6.55** M *AU Overall Category:* **3A**

LOCATION: Poorhouse Creek mainstem and tributaries from the Rt. 817 Bridge upstream to its headwaters.

State TMDL ID	*Use*	*WOS Attainment*	*303(d) Impairment Initial List Year*
	Aquatic Life	Not Assessed	
	Fish Consumption	Not Assessed	
	Recreation	Not Assessed	
	Wildlife	Not Assessed	

2004 Use Attainment by Assessment Units (AU)

WQS Class VI Sec 4 None No current data. These waters are not assessed. No VDH fish consumption advisory.

AU ID: **VAW-L43R_POO01A02** **2.57** M *AU Overall Category:* **3A**

LOCATION: Poorhouse Creek mainstem from its confluence with the North Fork of the South Mayo River upstream to the Rt. 817 Bridge.

State TMDL ID	*Use*	*WOS Attainment*	*303(d) Impairment Initial List Year*
	Aquatic Life	**Not Assessed**	
	Fish Consumption	**Not Assessed**	
	Recreation	**Not Assessed**	
	Wildlife	**Not Assessed**	

WQS Class V Sec 4 None No current data. These waters are not assessed. No VDH fish consumption advisory.

2004 Integrated Report Watershed Assessment Unit Summary

Watershed ID: **VAW-L43R** UPPER SOUTH MAYO RIVER/RUSSELL CREEK

Assessment Unit (AU)	TMDL ID	Overall AU Category	Stream & AU Description	AU Size
VAW-L43R_POO01A02		3A	Poorhouse Creek mainstem from its confluence with the North Fork of the South Mayo River upstream to the Rt. 817 Bridge.	2.57 MILES
VAW-L43R_POO02A02		3A	Poorhouse Creek mainstem and tributaries from the Rt. 817 Bridge upstream to its headwaters.	6.55 MILES
VAW-L43R_RCH01A02		3A	Rich Creek mainstem and tributaries from its confluence with the South Mayo River upstream to the Rt. 58 Bridge.	0.64 MILES
VAW-L43R_RCH02A02		3A	Rich Creek mainstem and tributaries from the Rt. 58 Bridge upstream to its headwaters.	3.71 MILES
VAW-L43R_RHY01A02		3A	Rhody Creek mainstem and tributaries from its confluence with the South Mayo River upstream to its headwaters.	4.25 MILES
VAW-L43R_SMR01A00	**VAW-L43R-01**	4A	South Mayo River mainstem from the Russell Creek mouth downstream to the Spoon Creek confluence.	5.77 MILES
VAW-L43R_SMR02A02	**VAW-L43R-01**	4A	South Mayo River mainstem from the Anglin Branch confluence downstream to the Russell Creek confluence on the South Mayo River.	8.02 MILES
VAW-L43R_SMR03A02	**VAW-L43R-01**	4A	South Mayo River mainstem from the Town of Stuart POTW downstream to the confluence of Anglin Branch.	4.39 MILES
VAW-L43R_SMR03B02	**VAW-L43R-01**	4A	South Fork Mayo River mainstem from the confluence of the North Fork South Mayo River downstream to the Town of Stuart POTW.	2.26 MILES
VAW-L43R_SMR04A00	**VAW-L43R-01**	4A	South Mayo River mainstem from the Town of Stuart water intake downstream to the North Fork South Mayo River confluence.	0.40 MILES
VAW-L43R_SMR05A00	**VAW-L43R-01**	4A	South Mayo River mainstem from the WQS natural trout section just upstream of the Stuart water intake downstream to the Town of Stuart intake.	0.49 MILES
VAW-L43R_SMR06A00	**VAW-L43R-01**	5D	South Mayo River mainstem from upstream of the Wilson Creek mouth downstream to the end of the WQS natural trout section located just upstream of the Town of Stuart water intake.	4.46 MILES
VAW-L43R_SMR07A00		3A	South Mayo River mainstem from its perennial headwaters downstream to near but upstream of the Wilson Creek mouth.	2.67 MILES
VAW-L43R_SMR20A00		3A	Remainder of Wilson Creek and tributaries in WQS sec. 3h in Watershed L43R.	5.86 MILES
VAW-L43R_SMR30A00		3A	Headwater tributaries in WQS section 4 not designated PWS in Watershed L43R.	4.25 MILES
VAW-L43R_SNF01A02		3A	North Fork South Mayo River mainstem and tributaries from its confluence with the South Mayo River upstream to its headwaters.	12.86 MILES
VAW-L43R_SNF02A04		2A	North Fork South Mayo River mainstem from its headwaters (36°43'05" / 80°17'54") downstream to below the Route 640 crossing and upstream of the Bull Mountain Fork confluence (36°41'22" / 80°17'09").	2.14 MILES
VAW-L43R_ZZZ01A00		3A	Remaining waters in watershed L43R.	47.61 MILES

2004 Integrated Report Watershed Assessment Unit Summary

VAW-L43R

UPPER SOUTH MAYO RIVER/RUSSELL CREEK

Total Assessment Units:
18

OVERALL 2004 WATERSHED SUMMARY *

Total Watershed Size:
118.9 MILES

Federal Category 5 Waters

Waters 'Impaired' requiring TMDL Studies

	'Impaired' for one or more parameters	Believed Natural	One TMDL complete one or more remains
(VA Subcategories)	**5A**	**5C**	**5D**
Impaired Waters:			4.46

Federal Categories 4A & 4C Waters

No further TMDL Study required

	Waters 'Impaired' TMDL complete	Waters 'Impaired' Natural
(VA Subcategories)	**4A**	**4C**
	21.33	

Federal Category 3 Waters

	No Data	Existing Data Insufficient to Assess	non-DEQ Data Method Collection and/or Laboratory not QA/QC'd: Use Not Attained 'Waters of Concern'	Use Attained
(VA Subcategories)	**3A**	**3B**	**3C**	**3D**
Insufficient Data:	90.97			

Federal Category 2 Waters

	Fully Supports Assessed Uses	Fully Supports but are 'Waters of Concern'
(VA Subcategories)	**2A**	**2B**
Support Some Uses:	2.14	

Federal Category 1 Waters

	'Fully Supports all Uses'
(VA Subcategories)	1
Supports All Uses:	

*** Note: Totals are based on Overall AU Category.**

2006 Impaired Waters

Categories 4 and 5 by DCR Watershed

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

Roanoke and Yadkin River Basins

Cause Group ID: **L43R-01-BAC** **South Mayo River**

2006 TMDL Group Codes: 00129 01708 85005

Location: The upper limit is 0.3 miles upstream of the Wilson Creek mouth (near Dobyns) on the South Mayo River and extends downstream to the Virginia / North Carolina State Line.

City / County: Henry Co Patrick Co

Use(s): Recreation

Cause(s) / VA Category: Escherichia coli / 4A Fecal Coliform / 4A Fecal Coliform / 5A

The South Mayo River Bacteria TMDL Load Duration Study with load allocations is complete with US EPA approval on 02/27/2004 and SWCB approval on 6/17/2004. The Bacteria TMDL Study and allocations can be viewed at http://www.deq.virginia.gov. Additional data collection causes the original bacteria 5.77 mile impairment (from Russell Creek mouth downstream to the mouth of Spoon Creek) to be extended 20.02 miles upstream with the 2004 IR. The 2004 IR extends the original listed bacteria impairment 10.86 miles downstream for a total impaired mileage of 36.65.

The original 1998 bacteria impairment (5.57 miles) is based on fecal coliform bacteria data producing a greater than 10 percent exceedence rate of the former 1000 cfu/100 ml instantaneous criterion at station 4ASMR016.09 (Rt. 700 Bridge at the USGS gaging station). Additional data collection and application of the current 400 cfu/100 ml instantaneous criterion results in the 2004 IR extension upstream from two stations 4ASMR033.98 (Rt. 787 Bridge West of Stuart) and 4ASMR027.44 (Rt. 681 Bridge South of Stuart). The 2004 10.86 mile downstream extension in watershed L45 results from additional FC data collection at station 4ASMR004.14 (Rt. 695 Bridge). Future Assessments and 303(d) Listings will replace fecal coliform bacteria with Escherichia coli (E.coli) as the indicator with sufficient E.coli data as per Water Quality Standards [9 VAC 25-260-170. Bacteria; other waters].

Station 4ASMR033.98 (Rt. 787 Bridge West of Stuart) There are no additonal data beyond the 2004 IR where five of 20 fecal coliform samples exceed the 400 cfu/100 ml instantaneous criterion. Exceeding values range from 500 to 1200 cfu/100 ml. The 2006 IR data window produces FC exceedences in two of 15 samples. Exceeding values are 900 and 1200 cfu/100 ml. (Note: 4ASMR033.98 is a 1999 Federal Consent Decree Attachment B station for fecal coliform bacteria. The station is not 2002 303(d) Listed as there are no exceedences of the former 1000 cfu/100 ml criterion from 19 samples within 2002 data window.)

4ASMR027.44- (Rt. 681 Bridge South of Stuart) Two of 12 FC samples exceed the 400 cfu/100 ml instantaneous criterion at 1400 and 1700 cfu/100 ml. The 2004 IR found two exceedences from nine observations.

4ASMR016.09- (Rt. 700 Bridge at the USGS gaging station) 2006 FC exceeds the 400 cfu/100 ml instantaneous criterion in 10 of 38 samples. The exceeding values range from 500 cfu/100 ml to greater than 16,000. Eight of 20 E.coli samples exceed the 235 cfu/100 ml instantaneous criterion. The range of exceedences is from 250 to greater than 2000 cfu/100 ml. One geomertic mean calculation exceeds the 126 cfu/100 ml at 374 cfu/100 ml.

4ASMR004.14- (Rt. 695 Bridge) There are no additional data beyond the 2004 IR where FC exceeds the 400 cfu/100 ml instantaneous criterion in two of 16 samples. Exceeding values are 500 and 6800 cfu/100 ml. One of nine FC observations exceed within the 2006 data window. In 2002 only one of 18 observations exceeded the former 1000 cfu/100 ml instantaneous criterion indicating full support.

Fact Sheet for DCR Watershed: L43R.*

South Mayo River	Estuary (Sq. Miles)	Reservoir (Acres)	River (Miles)
Escherichia coli - Total Impaired Size by Water Type:			5.77

2006 Impaired Waters

Categories 4 and 5 by DCR Watershed

Roanoke and Yadkin River Basins

South Mayo River	Estuary (Sq. Miles)	Reservoir (Acres)	River (Miles)
Fecal Coliform - Total Impaired Size by Water Type:			25.79

Sources:

Livestock (Grazing or Feeding Operations)	Municipal (Urbanized High Density Area)	On-site Treatment Systems (Septic Systems and Similar Decencentralized Systems)	Unspecified Domestic Waste
Wastes from Pets	Wildlife Other than Waterfowl		

*The narrative above describes the entire extent of the Impairment. Sizes presented may not represent the total overall size of the impairment. Impaired waters may cross DCR Watershed boundaries.

PROJECT Roanoke River Ba: ater Quality Management Plan

Study Area STUART - PATRICK SPRINGS

CONTENTS Assimilation Capacity Analysis ALT. 1 & 3

Hayes, Seay ttern and Mattern
ARCHITECTS · ENGINEERS · PLANNERS

DATE _____ COMM NO. 3828-T

PREL. _____ FINAL _____ SHEET NO. ____

CAL. BY _____ CKD. BY _____

Selected Alternative

STUART
YEAR 2000
SOUTH MAYO RIVER

Qw = 0.424 MGD = 0.656 CFS

DOw = 3.0 mg/l

Qs = 8.02 CFS *

DOs = 7.3 mg/l (100% SAT., 1200', 30°C)

$$\frac{(0.656)(3.0) + (8.02)(7.3)}{(0.656) + (8.02)} = \text{DOmix}$$

= 6.97 mg/l

DOmix = 6.97 mg/l

Qmix = 8.67 CFS

S = 0.0060 FT/FT

T = 30 °C

DOsag = 6.4 mg/l +

206.70 #/day BOD_5 Assimilation Capacity

206.70 #/day BOD_5 Assimilation Capacity
− 64.81 #/day BOD_5 Background (At 1.5 mg/l)
141.89 #/day BOD_5 Allowable Discharge

At 0.23 #BOD_5/100 Gal., the raw loading is 975.2 # BOD_5/day

975.2 #/day BOD_5 Influent → 141.9 #/day BOD_5 Effluent

Requires 85.5% Treatment.

* 7/10 Low Flow of 8.70 CFS minus projected withdrawal of 0.68 CFS.

+ Minimum D.O. of record for 1970 - 1973 minus 0.2 mg/l.

NOTE: THIS PLAN VERSION HAS NOT BEEN APPROVED.

TABLE 2: SEGMENT CLASSIFICATION - STANDARDS*
SMITH-DAN RIVER SUBAREA
HUC CODES 03010103, 03010104, 03010105 AND 03040101

Stream Name	Former 303(e) Segment Number	Mile to Mile	Stream Classification	Comments	VBIDs
					HUC 03010103
Dan River	4A-10	211.25 to 168.37	E.L.	Main and tributaries.	-19R,-20L,-21L
Little Dan River	4A-10	12.06 to 0.88	E.L.	Main and tributaries to VA-NC State Line.	-19R
South Mayo River	4A-8	40.93 to 32.85	W.Q.-FC	Main only to confluence with N.F. South Mayo River.	-15R
South Mayo River	4A-8	40.93 to 32.85	E.L.	Tributaries to confluence with N.F. South Mayo River.	-15R,-17L,-18L
South Mayo River	4A-8	32.85 to 25.85	W.Q.-DO,FC	Main only.	-16R
South Mayo River	4A-8	32.85 to 25.85	E.L.	Tributaries only.	-15R
South Mayo River	4A-8	25.85 to 0.32	E.L.	Main and tributaries from confluence with N.F. South Mayo River to VA-NC State line.	-15R
North Mayo River	4A-8	23.42 to 0.19	E.L.	Main and tributaries to VA-NC State Line.	-14R
Smith River	4A-7	85.42 to 46.82	E.L.	Main and tributaries to Philpott Dam.	-10L,-11R,-12L, -13R
Smith River	4A-7	46.82 to 26.66	W.Q.-DO,FC	Main only from Philpott Dam to Martinsville City Dam.	-07R
X-Trib. to Smith River	4A-7	0.32 TO 0.00	W.Q.-DO	Main only.	-08R
Rangely Creek	4A-7	4.60 to 0.00	W.Q.-FC	Main only.	-06R
Reed Creek	4A-7	13.10 to 0.00	E.L.	Main and tributaries.	-08R
Smith River	4A-7	46.82 to 26.66	E.L.	Tributaries only from Philpott Dam to Martinsville City Dam.	-06R,-08R,-09L
Smith River	4A-7	26.66 to 5.88	W.Q.-DO	Main only from Martinsville City Dam to VA-NC State Line.	-04R
Marrowbone Creek	4A-7	13.93 to 0.00	E.L.	Main and tributaries.	-06R
Smith River	4A-7	26.66 to 5.88	E.L.	Tributaries only from Martinsville City Dam to VA-NC State Line.	-05R,-06R
X-Trib. to Reds Creek	4A-7	1.04 to 0.00	W.Q.-DO	Main only.	-06R
Leatherwood Creek	4A-7	19.14 to 0.00	E.L.	Main and tributaries.	-05R

NOTE: THIS PLAN VERSION HAS NOT BEEN APPROVED.

TABLE 6: WASTELOAD ALLOCATIONS BASED ON EXISTING DISCHARGE POINT[1]
SMITH-DAN RIVER SUBAREA

Map Location	Stream Name	Former 303(e) Segment Number	VAID	Segment[2] Classification Standards	Mile to[3] Mile	Discharger	VPDES Permit Number	VPDES Permit Limits BOD_5 kg/day	303(e)[4] Wasteload Allocation BOD_5 kg/day	Total Maximum Daily Load W.Q. Segments BOD_5 kg/day
HUC 03040101										
A	Birds Br.	4B-1	-01R	E.L.	3.24-	Doe Run Lodge Properties, Inc. - Doe Run Lodge STP	VA0066532	1.40	Secondary	
B	X-Trib. to Birds Br.	4B-1	-01R	E.L.	1.44-	Groundhog Mtn. Property Owners, Inc., - Groundhog Mtn. STP	VA0066575	3.00	Secondary	
HUC 03010103										
1	X-Trib. to South Mayo R.	4A-8	-15R	E.L.	0.42-	Stuart Town WTP	VA0055336	N/A	Secondary	
	South Mayo R.	4A-8	-16R	W.Q-DO,FC	32.05-25.05	SOUTH MAYO R. SEGMENT			64.00	138.20
2					31.98	United Elastic Corp. Stuart Plant	VA0001546	N/A	N/A	
C					*30.78	Stuart Town STP	VA0022985	64.00	64.40	
3	Rhody Cr.	4A-8	-15R	E.L.	0.20-	JPS Elastomerics Corp. Patrick Plant	VA0001562	0.53	Secondary	
D	X-Trib. to Jennings Cr.	4A-8	-14R	E.L.	0.20-	VDOC - Field Unit #28 STP	VA0023558	2.50	Secondary	
4	Smith R.	4A-7	-11R	E.L.	76.62-	Liberty Fabrics, Inc.	VA0001554	34.00	Secondary	
5	Hale Cr.	4A-7	-11R	E.L.	0.68-	VDPR - Fairystone State Park WTP	VA0030660	N/A	Secondary	
HS	Town Cr.	4A-7	-00R	E.L.	5.16-	Blue Ridge Talc Co., Inc.	VA0087157	N/A	Secondary	
6	X-Trib. to Smith R.	4A-7	-06R	E.L.	0.22-	Henry Co. PSA - Upper Smith River WTP	VA0058441	N/A	N/A	N/A
CG	Towne Cr.	4A-7	-00R	E.L.		Bassett Mirror Company, Inc.	VA0086665	0.40	Secondary	
7	Smith R.	4A-7	-07R	W.Q.-DO,FC	39.94-	Bassett Furniture Industries	VA0022080	N/A	N/A	N/A
HS	X-Trib. to Smith R.	4A-7	-08R	W.Q.-DO	0.32-0.00	Clyde D. Prillaman - Stone Hollow Lagoon	VA0086886	0.55	0.55	0.63
[redacted]							VA0001414	N/A	N/A	N/A

France,Becky

From: Ewing, Amy (DGIF)
Sent: Friday, February 01, 2008 11:41 AM
To: France,Becky
Cc: Pinder, Mike (DGIF); LaRoche, Bud (DGIF)
Subject: ESSLog# 24644)VA0022985_Town of Stuart WWTP permit re-issuance

Becky,

We have reviewed the subject permit re-issuance and outfall location located in the South Mayo River in Patrick County. According to our records, state Threatened orangefin madtom is known from Poorhouse Creek and the South Mayo River upstream of this outfall location. In addition, waters upstream of this discharge location, such as Poorhouse Creek and the South Mayo River, have been designated wild trout streams.

To improve the habitat available to listed species and important fishery resources, we recommend that the treatment method for the discharge be upgraded to UV or ozone. We note that no changes to this permit are proposed and therefore no instream work is planned. Therefore, time of year restrictions applicable to instream work is not necessary.

Thank you.

Amy M. Ewing
Environmental Services Biologist
Virginia Dept. of Game and Inland Fisheries
4010 West Broad Street
Richmond, VA 23230
804-367-2211
amy.ewing@dgif.virginia.gov

From: France, Becky (DEQ)
Sent: Friday, January 04, 2008 4:34 PM
To: Ewing, Amy
Subject: Endangered Species Review Town of Stuart WWWP

The Town of Stuart WWTP application is for a reissuance. The design flow for the existing discharge from the Town of Stuart WWTP is 0.6 MGD, and the permittee is not proposing an increase in the design flow. This design flow is the total flow from the facility. There is one outfall to the South Mayo River with longitude and latitude of 36o38'10" 80o15'15". The receiving stream flow statistics used in the 2003 permit were 7.75 MGD (7Q10) and 7.10 MGD (1Q10). I have attached a copy of a topographic map showing the discharge location.

L. Preston Bryant, Jr.
Secretary of Natural Resources

Joseph H. Maroon
Director

COMMONWEALTH of VIRGINIA

DEPARTMENT OF CONSERVATION AND RECREATION

217 Governor Street
Richmond, Virginia 23219-2010
(804) 786-7951 FAX (804) 371-2674

December 6, 2007

Becky L. France
DEQ West Central Regional Office
3019 Peters Creek Road
Roanoke, VA 24019

Re: Town of Stuart WWTP

Dear Ms. France:

The Department of Conservation and Recreation's Division of Natural Heritage (DCR) has searched its Biotics Data System for occurrences of natural heritage resources from the area outlined on the submitted map. Natural heritage resources are defined as the habitat of rare, threatened, or endangered plant and animal species, unique or exemplary natural communities, and significant geologic formations.

According to the information currently in our files, the Poorhouse Creek – Mayo River Stream Conservation Unit (SCU) is documented in the South Mayo River. SCUs identify stream reaches that contain aquatic natural heritage resources, including 2 miles upstream and 1 mile downstream of documented occurrences, and all tributaries within this reach. SCUs are given a biodiversity significance ranking based on the rarity, quality, and number of element occurrences they contain; on a scale of 1-5, 1 being most significant. The Poorhouse Creek – Mayo River SCU has been given a biodiversity significance ranking of B2, which represents a site of very high significance. The natural heritage resources of concern associated with this SCU are:

Noturus gilberti	Orangefin madtom	G2/S2/SOC/LT
Thoburnia hamiltoni	Rustyside sucker	G3/S2/NL/SC

The Orangefin madtom, native to the upper Roanoke drainage in Virginia and North Carolina, inhabits moderate to strong riffles and runs having little or no silt in moderate-gradient, intermontane and upper Piedmont streams. This species is an intersticine dweller, found in or near cavities formed by rubble and boulders (Jenkins and Burkhead, 1993). Please note that this species is currently classified as a species of concern by the United States Fish and Wildlife Service (USFWS) and as threatened by the Virginia Department of Game and Inland Fisheries (VDGIF).

The Rustyside sucker, known only from the upper Roanoke drainage in Patrick County, occupies moderate and swift currents of riffles, runs, and heads of pools, with clean or very slightly silted gravel, rubble, boulder, and bedrock substrates (Burkhead & Jenkins, 1991). Larger individuals are restricted to moderate to swift riffles and runs, and the head of pools. Land use practices that lead to siltation and

industrial development are forms of habitat degradation that adversely affect the continued viability of the Rustyside sucker (Jenkins & Burkhead, 1993). Please note that this species is currently classified as a special concern species by the VDGIF, however, this designation has no legal status.

In addition, the South Fork Mayo River has been designated by the VDGIF as a "Threatened and Endangered Species Water. The species associated with this T & E Waters is the Orangefin madtom.

Due to the legal status of the Orangefin madtom, DCR recommends coordination with the VDGIF to ensure compliance with protected species legislation.

Our files do not indicate the presence of any State Natural Area Preserves under DCR's jurisdiction in the project vicinity.

Under a Memorandum of Agreement established between the Virginia Department of Agriculture and Consumer Services (VDACS) and the Virginia Department of Conservation and Recreation (DCR), DCR represents VDACS in comments regarding potential impacts on state-listed threatened and endangered plant and insect species. The current activity will not affect any documented state-listed plants or insects.

New and updated information is continually added to Biotics. Please contact DCR for an update on this natural heritage information if a significant amount of time passes before it is utilized.

The Virginia Department of Game and Inland Fisheries maintains a database of wildlife locations, including threatened and endangered species, trout streams, and anadromous fish waters, that may contain information not documented in this letter. Their database may be accessed from www.dgif.virginia.gov/wildlife/info map/index.html, or contact Shirl Dressler at (804) 367-6913.

Should you have any questions or concerns, feel free to contact me at 804-371-2708. Thank you for the opportunity to comment on this project.

Sincerely,

S. René Hypes
Project Review Coordinator

Cc: Amy Ewing, VDGIF
Kim Smith, USFWS

Literature Cited

Burkhead, N.M. and R.E. Jenkins. 1991. Fishes in Virginia's Endangered Species: Proceedings of a Symposium. K. Terwilliger ed. The McDonald and Woodward Publishing Company, Blacksburg, Virginia.

Jenkins, R. E., and N. M. Burkhead. 1993. Freshwater fishes of Virginia. American Fisheries Society, Bethesda, Maryland

DCR

Department of Conservation & Recreation

CONSERVING VIRGINIA'S NATURAL & RECREATIONAL RESOURCES

PROJECT INFORMATION

TITLE: Town of Stuart WWTP

DESCRIPTION: municipal discharge 0.6 MGD

EXISTING SITE CONDITIONS: discharge to South Mayo River

QUADRANGLES: STUART

COUNTIES: Patrick

Latitude/Longitude (DMS): 363808/801515

Acreage:

Comments: This discharge is an existing municipal discharge from the treatment of domestic sewage.

REQUESTOR INFORMATION

Contact Name: Becky L. France

Company Name: DEQ-West Central Regional Office

Address: 3019 Peters Creek Road

City: Roanoke **State:** VA **Zip:** 24019

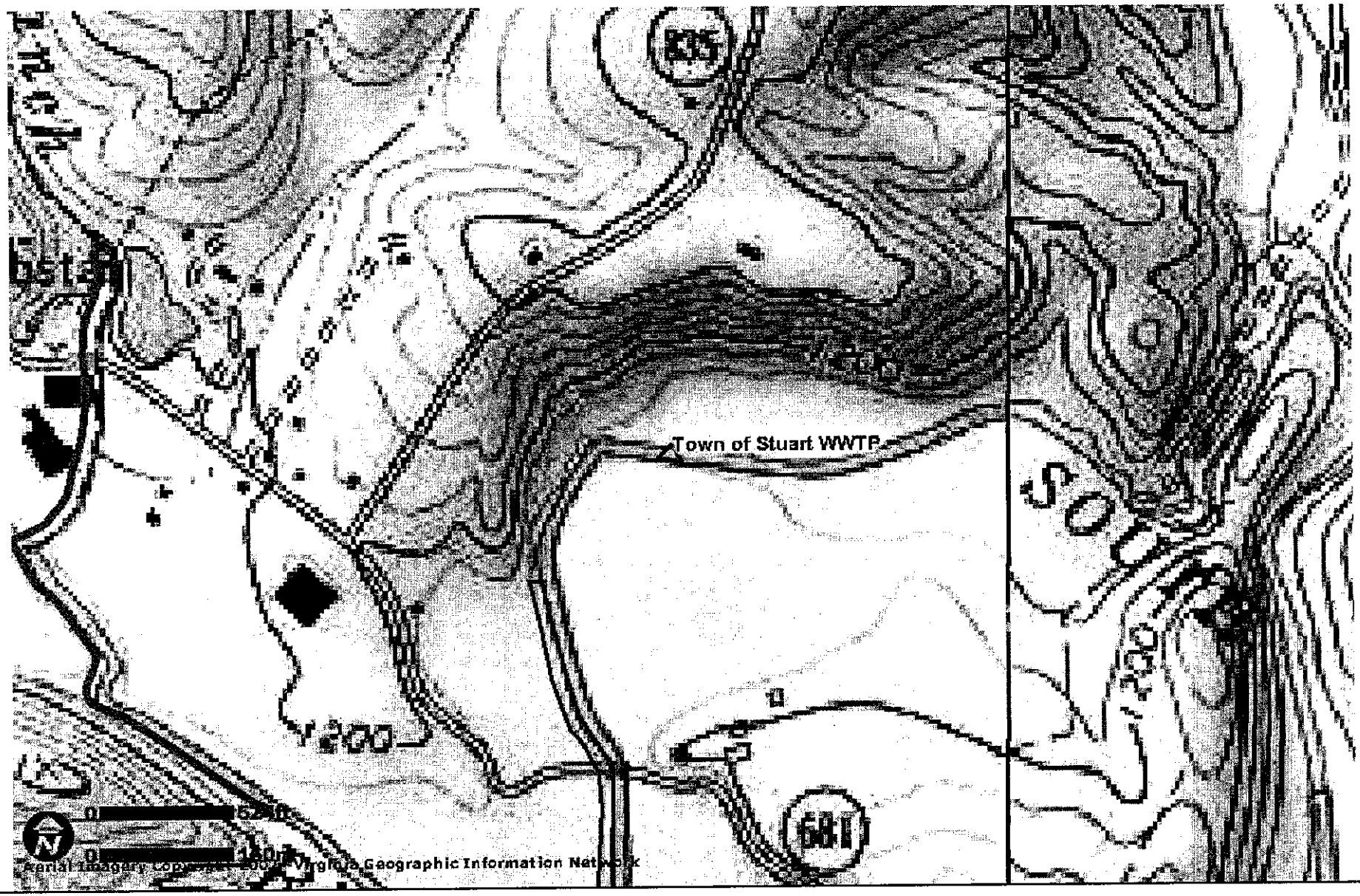
Phone: 540-562-6793 **Fax:** 540-562-6860 **Email:** blfrance@deq.virginia.gov

Site-Name	Group-Name	common-name	scientific-name	GRANK	SRANK	Fed Status	st status	EO Rank	last obs date	precision
	Vertebrate Animal	Rustyside Sucker	Thoburnia hamiltoni	G3	S2		SC	E	1987	M
NO NAME BRANCH	Vascular Plant	Small-anthered Bittercress	Cardamine micranthera	G2	S1	LE	LE	C	2002-05-01	
NORTH FORK OF SOUTH MAYO RIVER	Vascular Plant	Small-anthered Bittercress	Cardamine micranthera	G2	S1	LE	LE	D	1997-06-29	
POORHOUSE CREEK - MAYO RIVER SCU	Vertebrate Animal	Orangefin Madtom	Noturus gilberti	G2	S2	SOC	LT	E	1985-	S
POORHOUSE CREEK - MAYO RIVER SCU	Vertebrate Animal	Orangefin Madtom	Noturus gilberti	G2	S2	SOC	LT	B	2004-07-27	S
POORHOUSE CREEK - MAYO RIVER SCU	Vertebrate Animal	Rustyside Sucker	Thoburnia hamiltoni	G3	S2		SC	E	2004-07-27	S
RICH CREEK	Vascular Plant	Small-anthered Bittercress	Cardamine micranthera	G2	S1	LE	LE	E	2002-05-01	S

Natural Heritage Resources within SearchRadius

Conservation Site Name	Site Type	Brank	Acreage	Listed Species Presence
RICH CREEK	Conservation Site	B3	111	FL
	GLNHR			NL
POORHOUSE CREEK - MAYO RIVER SCU	SCU	B2	18	SL
NO NAME BRANCH	Conservation Site	B3	299	FL
NORTH FORK OF SOUTH MAYO RIVER	Conservation Site	B3	8	FL

Natural Heritage Conservation Sites within Search Radius: 5



Quads: STUART

Counties: Patrick

Town of Stuart WWTP

Company: DEQ-West Central Regional Office

Lat/Long: 363808/801515

Virginia Fish and Wildlife Information Service

Define Point of Interest

36,38,10.0 -80,15,15.0
is the Search Point

Submit Cancel

Search Point
- (•) **Change** to "clicked" map point
- ( ) **Fixed** at 36,38,10.0 - 80,15,15.0

Show Position Rings
(•) Yes ( ) No
1 mile and 1/4 mile at the **Search Point**

Show Search Area
(•) Yes ( ) No
2 miles

Search Point is at map center

Base Map Choices
Topography

Map Overlay Choices
Current List: Position, Search

Map Overlay Legend

Position Rings 1 mile and 1 4 mile at the Search Point

2 mile radius Search Area

Help

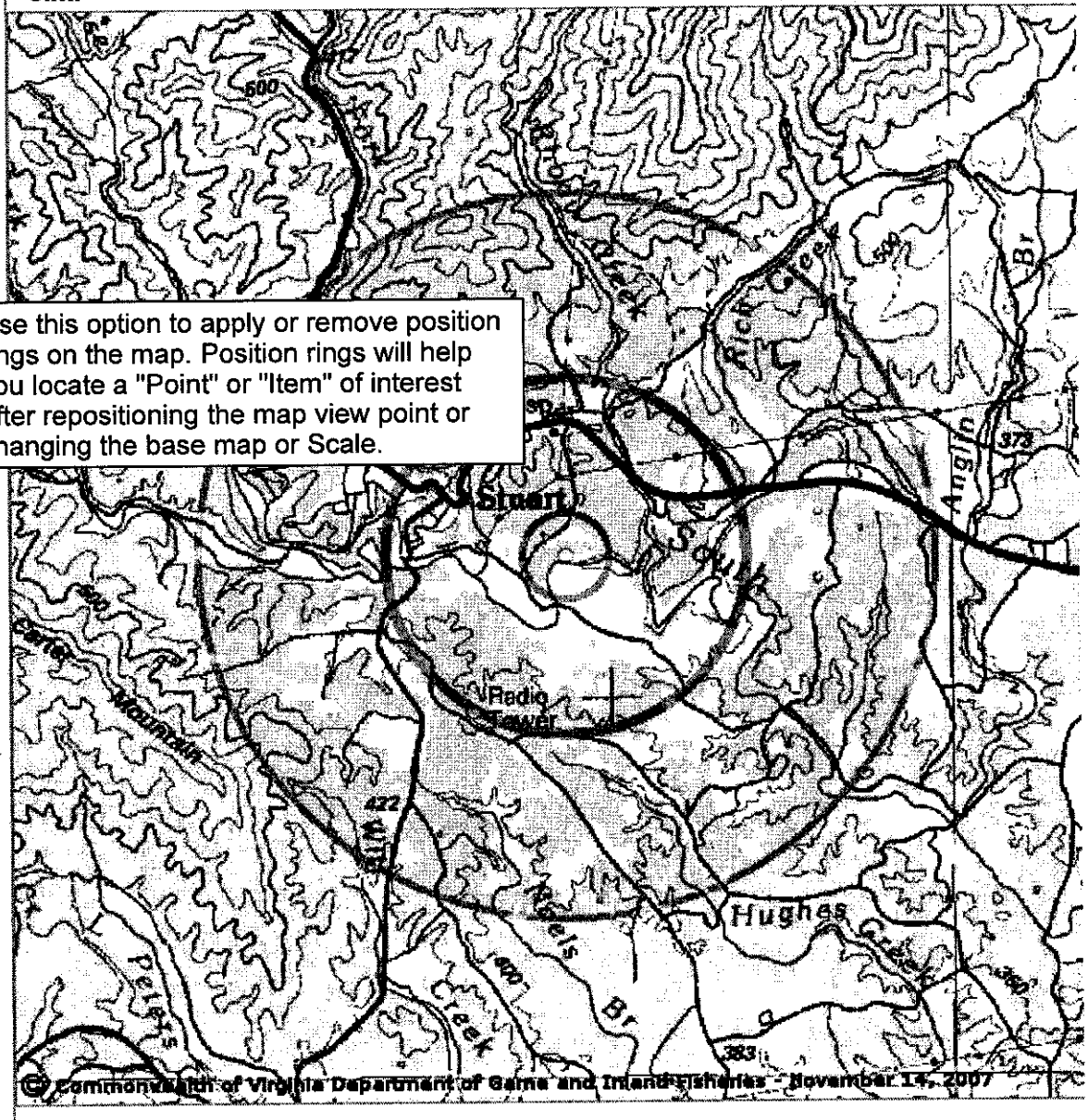
Map Click: Pan

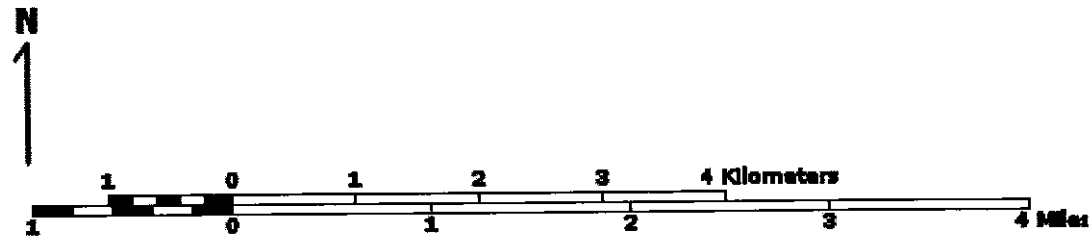
Refresh Browser Page

Map Scale: In Zoom Out

Screen Size: Small Size

Use this option to apply or remove position rings on the map. Position rings will help you locate a "Point" or "Item" of interest after repositioning the map view point or changing the base map or Scale.





Point of Search 36,38,10.0 -80,15,15.0

Virginia Fish and Wildlife Information Service

Geographic Search ▶ Step 1: Define Point of Interest ▶ Step 2: Customize Report ▶ Report

Species List Report

Help printer-friendly ver

Home

Database Search

Geographic Search

By Map

By Coordinates

By Place Name

Species Information

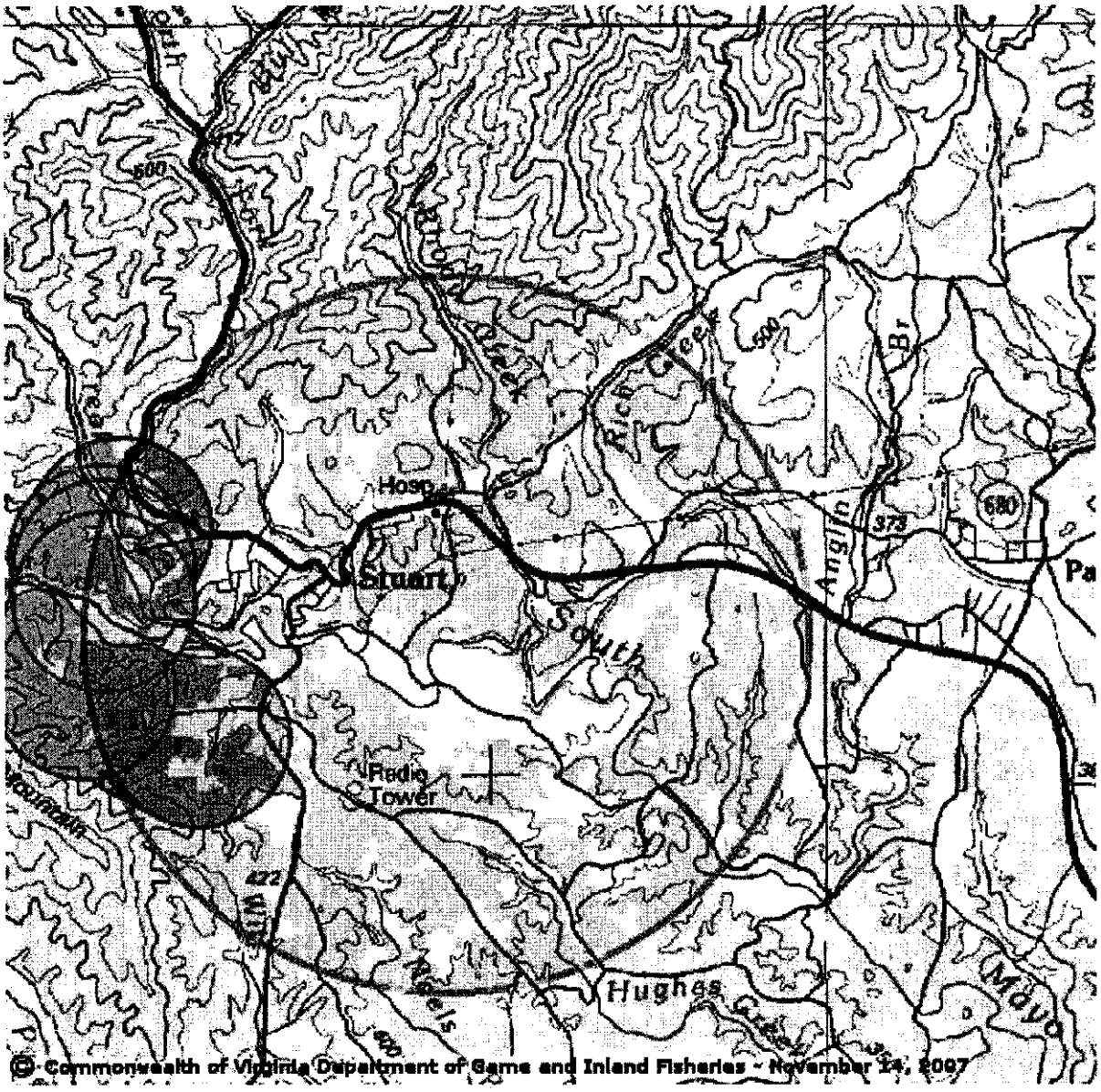
Help

List of species known or likely to occur within a **2 mile radius of 363810 -801515** in **Patrick, Va.** This report is compiled on 11/14/2007,3:06:31 PM

1-20 Species Records To view records from **21-67** Ne

Bova Code	Status*	Common Name	Scientific Name	Confirmed	Databa
010214	FESE	Logperch, Roanoke	Percina rex	No	BOVA
010127	FSST	Madtom, orangefin	Noturus gilberti	Yes	Collecti
010109	FS	Sucker, Roanoke hog	Hypentelium roanokense	Yes	Collecti Collecti
010110	FS	Jumprock, bigeye	Scartomyzon (= Moxostoma) ariommus (= ariommum)	Yes	Collecti Collecti
010115	FSSS	Sucker, rustyside	Thoburnia (= Moxostoma) hamiltoni	Yes	Collecti Collecti Collecti
010174	FSSS	Bass, Roanoke	Ambloplites cavifrons	Yes	Collecti Collecti Collecti
010200	FS	Darter, riverweed	Etheostoma podostemone	Yes	Collecti Collecti Collecti Collecti
010349	FS	Chub, thicklip	Cyprinella labrosa	Yes	Collecti Collecti Collecti Collecti
010363	FS	Darter, Appalachia	Percina gymnocephala	Yes	Collecti Collecti Collecti Collecti
010041		Shad, gizzard	Dorosoma cepedianum	Yes	Collecti Collecti Collecti Collecti
010050		Trout, rainbow	Oncorhynchus mykiss	Yes	Collecti Collecti Collecti Collecti Collecti
010051		Trout, brown	Salmo trutta	Yes	Collecti

FE federal endangered
SE-state endangered
SS -state special concern



Midtown, Iron Refin collection

Confirm Sucker, Roanoke hog 010109 in Collections

36,38,10.0 -80,15,15.0
is the Search Point

Show Position Rings
○ Yes ◉ No
1 mile and 1/4 mile at the **Search Point**

Show Search Area
◉ Yes ○ No
2 miles

Search Point is at map center

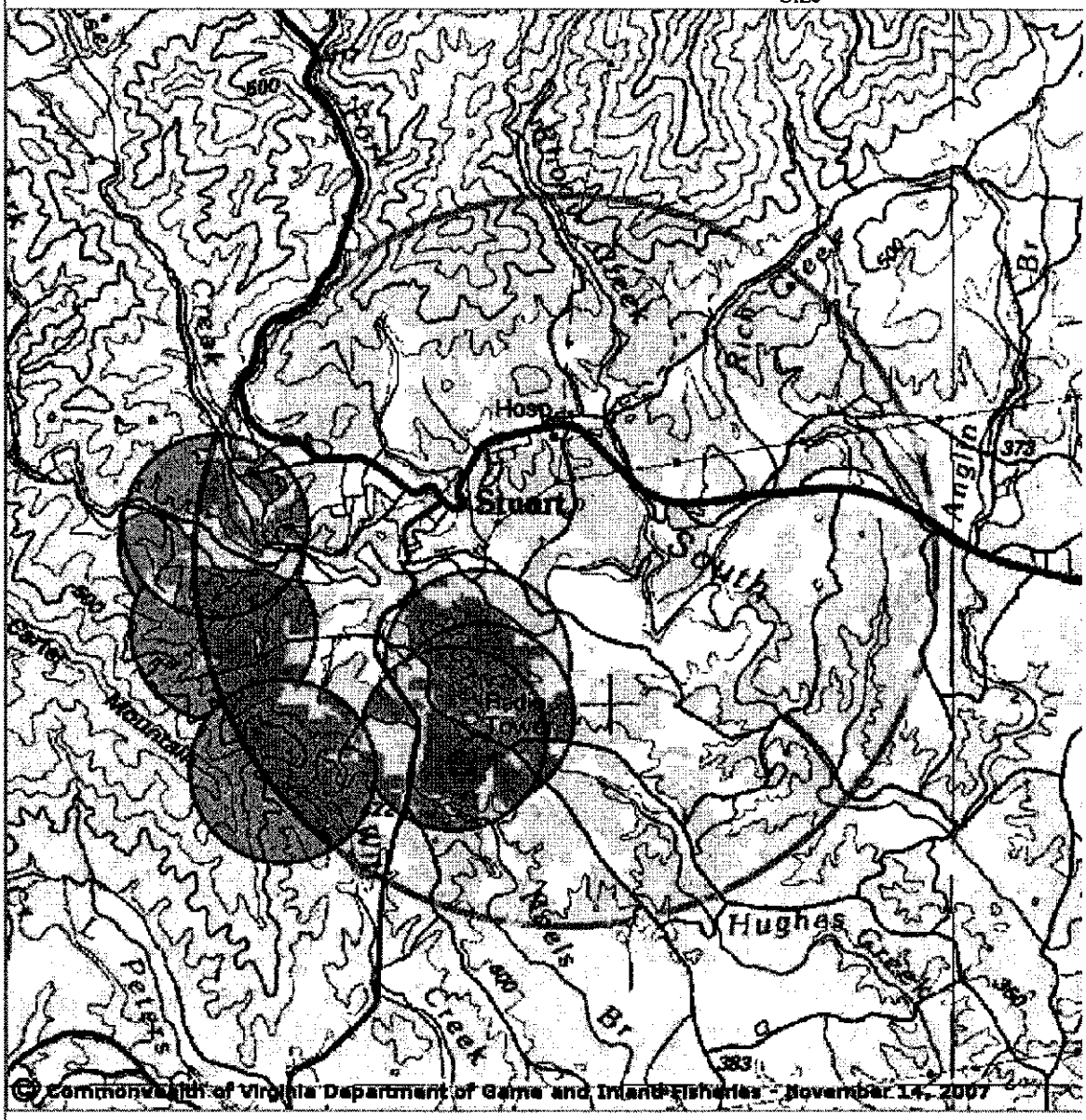
Base Map Choices
Topography

Map Overlay Choices
Current List: Search, Collections

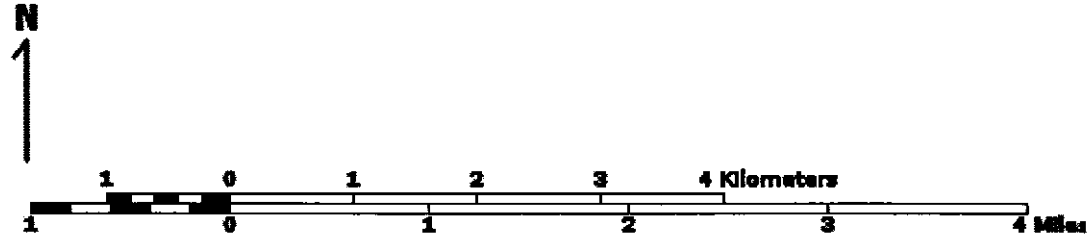
Map Overlay Legend
2 mile radius Search Area
Data Collection Site
Selected Site

Virginia Fish and Wildlife Information Service

Help
Map Click Pan
Map Scale In Zoom Out
Refresh Browser Page
Screen Size Small Size



Sucker, Roanoke hog collections



Point of Search 36,38,10.0 -80,15,15.0

Confirm Sucker, rustyside 010115 in Collections

36,38,10.0 -80,15,15.0
is the Search Point

Show Position Rings
○ Yes ◉ No
1 mile and 1/4 mile at the **Search Point**

Show Search Area
◉ Yes ○ No
2 miles

Search Point is at map center

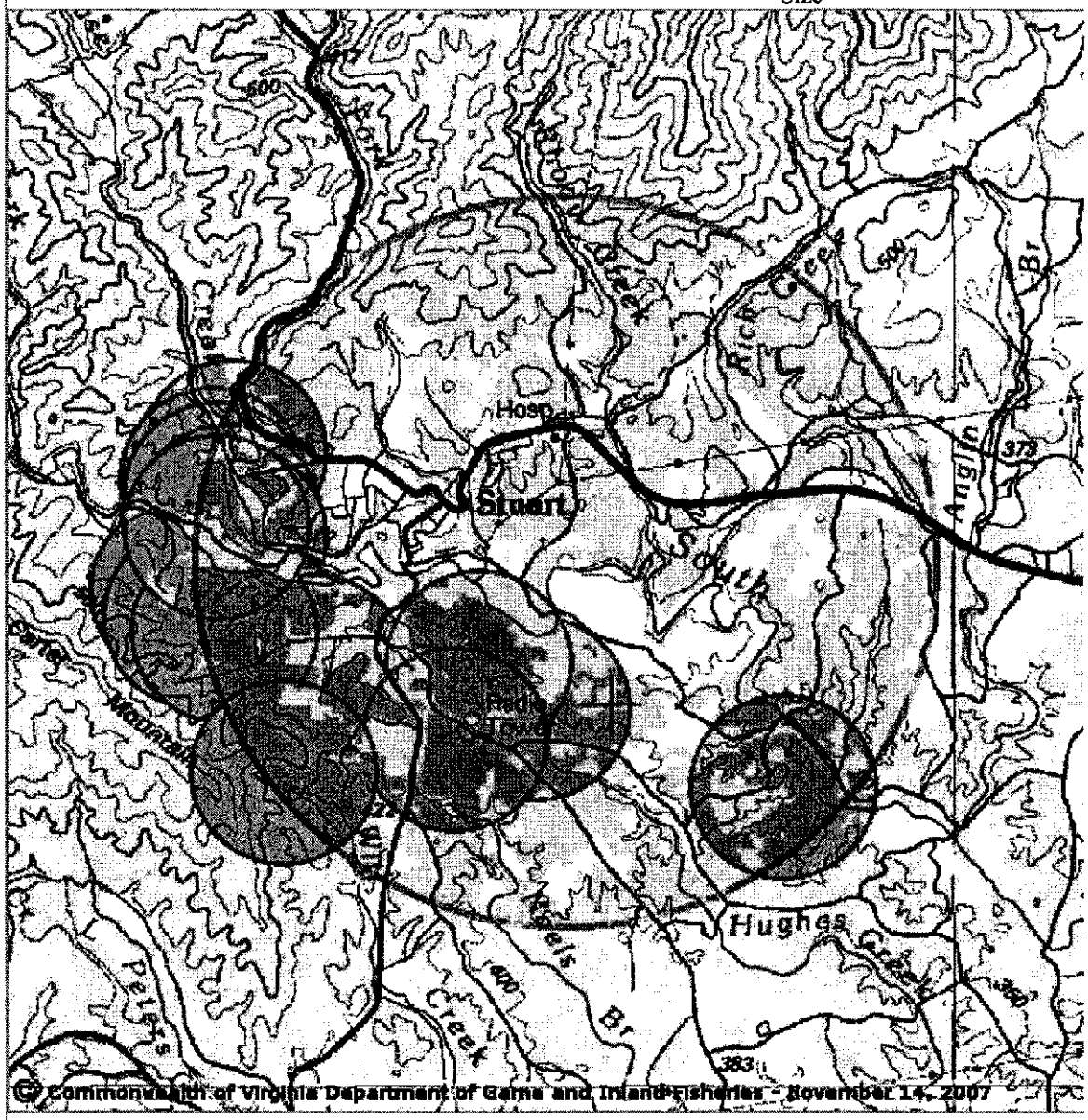
Base Map Choices
Topography

Map Overlay Choices
Current List: Search, Collections

Map Overlay Legend
2 mile radius Search Area
Data Collection Site
Selected Site

Virginia Fish and Wildlife Information Service

Help
Map Click Pan
Refresh Browser Page
Map Scale In Zoom Out
Screen Size Small Size



Sucker, rustyside collection

N

1 0 1 2 3 4 Kilometers
1 0 1 2 3 4 Miles

Point of Search 36,38,10.0 -80,15,15.0

Confirm Darter, riverweed 010200 in Collections

36,38,10.0 -80,15,15.0
is the Search Point

Show Position Rings
○ Yes ◉ No
1 mile and 1/4 mile at the **Search Point**

Show Search Area
◉ Yes ○ No
2 miles

Search Point is at map center

Base Map Choices
Topography

Map Overlay Choices
Current List: Search, Collections

Map Overlay Legend

2 mile radius Search Area

Data Collection Site

Selected Site

Virginia Fish and Wildlife Information Service

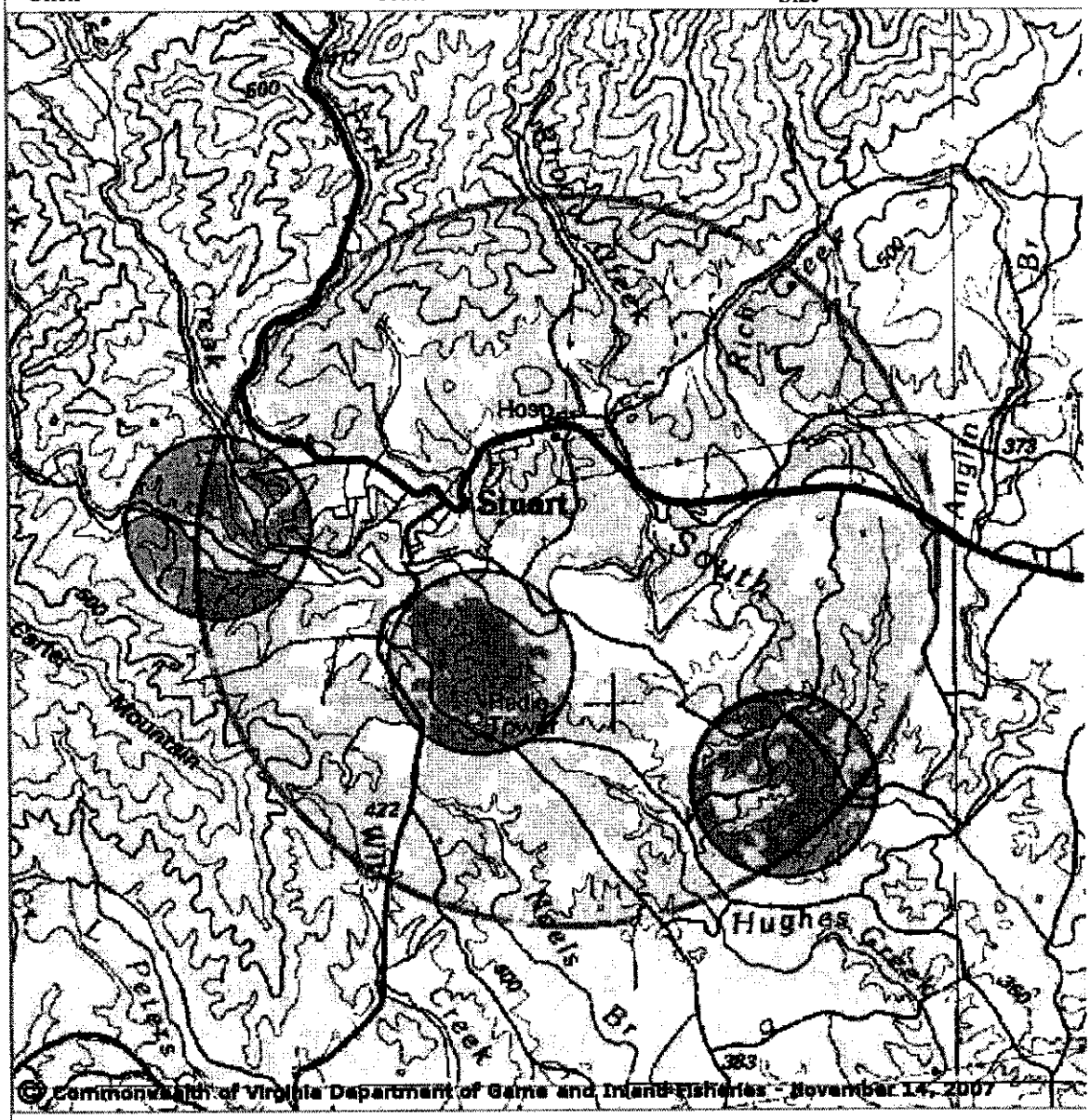
Help

Refresh Browser Page

Map Click: Pan

Map Scale: In Zoom Out

Screen Size: Small Size



Darter, riverweed

N

1 0 1 2 3 4 Kilometers

1 0 1 2 3 4 Miles

Point of Search 36,38,10.0 -80,15,15.0

Attachment F

Effluent Data

Town of Stuart WWTP
VA0022985

Effluent Dissolved Zinc

Date	Concentration (µg/L) (Grab)
05/30/07	129
02/04/08	156
04/10/08	143
04/11/08	117
04/14/08	120
04/15/08	125

Town of Stuart WWTP
VA0022985

Effluent Dissolved Copper

Date	Concentration (µg/L) (Grab)
05/30/07	7.0
02/04/08	8.0
04/10/08	9.6
04/11/08	10.8
04/14/08	9.3
04/15/08	10.3

REI Consultants, Inc. Analytical Results

Date: *08-Apr-08*

CLIENT:	TOWN OF STUART	**WorkOrder:**	0802198
Client Sample ID:	WWTP EFF. 001	**Lab ID:**	0802198-01A
Project:	PERMIT RENEWAL	**Collection Date:**	2/4/2008 2:14:00 PM
Site ID:	STUART WWTP/VA	**Matrix:**	WASTE WATER

Analyses	Result	Units	Qual	PQL	MCL	Prep Date	Date Analyzed
HARDNESS			**SM2340 B**			Analyst: **JD**	
Hardness, Total (As CaCO3)	63.0	mg/L		1.00	NA	02/07/08 9:10 AM	02/07/08 1:45 PM
SEMIVOLATILE ORGANIC COMPOUNDS			**E625**			Analyst: **CLS**	
Acenaphthene	ND	mg/L		0.0103	NA	02/06/08 10:12 AM	02/06/08 9:20 PM
Anthracene	ND	mg/L		0.0103	NA	02/06/08 10:12 AM	02/06/08 9:20 PM
Benzidine	ND	mg/L		0.0103	NA	02/06/08 10:12 AM	02/06/08 9:20 PM
Benzo(a)anthracene	ND	mg/L		0.0103	NA	02/06/08 10:12 AM	02/06/08 9:20 PM
Benzo(a)pyrene	ND	mg/L		0.0103	NA	02/06/08 10:12 AM	02/06/08 9:20 PM
Benzo(k)fluoranthene	ND	mg/L		0.0103	NA	02/06/08 10:12 AM	02/06/08 9:20 PM
Bis(2-chloroethyl)ether	ND	mg/L		0.0103	NA	02/06/08 10:12 AM	02/06/08 9:20 PM
Bis(2-chloroisopropyl)ether	ND	mg/L		0.0103	NA	02/06/08 10:12 AM	02/06/08 9:20 PM
Bis(2-ethylhexyl)phthalate	0.0127	mg/L		0.0103	NA	02/06/08 10:12 AM	02/06/08 9:20 PM
Butyl benzyl phthalate	ND	mg/L		0.0103	NA	02/06/08 10:12 AM	02/06/08 9:20 PM
2-Chloronaphthalene	ND	mg/L		0.0103	NA	02/06/08 10:12 AM	02/06/08 9:20 PM
2-Chlorophenol	ND	mg/L		0.0103	NA	02/06/08 10:12 AM	02/06/08 9:20 PM
4-Chlorophenyl phenyl ether	ND	mg/L		0.0103	NA	02/06/08 10:12 AM	02/06/08 9:20 PM
Chrysene	ND	mg/L		0.0103	NA	02/06/08 10:12 AM	02/06/08 9:20 PM
Dibenzo(a,h)anthracene	ND	mg/L		0.0103	NA	02/06/08 10:12 AM	02/06/08 9:20 PM
Di-n-butyl phthalate	ND	mg/L		0.0103	NA	02/06/08 10:12 AM	02/06/08 9:20 PM
1,2-Dichlorobenzene	ND	mg/L		0.0103	NA	02/06/08 10:12 AM	02/06/08 9:20 PM
1,3-Dichlorobenzene	ND	mg/L		0.0103	NA	02/06/08 10:12 AM	02/06/08 9:20 PM
1,4-Dichlorobenzene	ND	mg/L		0.0103	NA	02/06/08 10:12 AM	02/06/08 9:20 PM
3,3'-Dichlorobenzidine	ND	mg/L		0.0103	NA	02/06/08 10:12 AM	02/06/08 9:20 PM
2,4-Dichlorophenol	ND	mg/L		0.0103	NA	02/06/08 10:12 AM	02/06/08 9:20 PM
Diethyl phthalate	ND	mg/L		0.0103	NA	02/06/08 10:12 AM	02/06/08 9:20 PM
Dimethyl phthalate	ND	mg/L		0.0103	NA	02/06/08 10:12 AM	02/06/08 9:20 PM
2,4-Dimethylphenol	ND	mg/L		0.0103	NA	02/06/08 10:12 AM	02/06/08 9:20 PM
2,4-Dinitrophenol	ND	mg/L		0.0103	NA	02/06/08 10:12 AM	02/06/08 9:20 PM
2,4-Dinitrotoluene	ND	mg/L		0.0103	NA	02/06/08 10:12 AM	02/06/08 9:20 PM
1,2-Diphenylhydrazine	ND	mg/L		0.0103	NA	02/06/08 10:12 AM	02/06/08 9:20 PM
Fluoranthene	ND	mg/L		0.0103	NA	02/06/08 10:12 AM	02/06/08 9:20 PM
Fluorene	ND	mg/L		0.0103	NA	02/06/08 10:12 AM	02/06/08 9:20 PM
Hexachlorobenzene	ND	mg/L		0.0103	NA	02/06/08 10:12 AM	02/06/08 9:20 PM
Hexachlorobutadiene	ND	mg/L		0.0103	NA	02/06/08 10:12 AM	02/06/08 9:20 PM
Hexachlorocyclopentadiene	ND	mg/L		0.0103	NA	02/06/08 10:12 AM	02/06/08 9:20 PM
Hexachloroethane	ND	mg/L		0.0103	NA	02/06/08 10:12 AM	02/06/08 9:20 PM
Indeno(1,2,3-cd)pyrene	ND	mg/L		0.0103	NA	02/06/08 10:12 AM	02/06/08 9:20 PM
Isophorone	ND	mg/L		0.0103	NA	02/06/08 10:12 AM	02/06/08 9:20 PM
Naphthalene	ND	mg/L		0.0103	NA	02/06/08 10:12 AM	02/06/08 9:20 PM

Key:
- MCL Maximum Contaminant Level
- MDL Minimum Detection Limit
- NA Not Applicable
- ND Not Detected at the PQL or MDL
- PQL Practical Quantitation Limit
- TIC Tentatively Identified Compound, Estimated Concentration

Qualifiers:
- B Analyte detected in the associated Method Blank
- E Estimated Value above quantitation range
- H Holding times for preparation or analysis exceeded
- S Spike/Surrogate Recovery outside accepted recovery limits
- * Value exceeds Maximum Contaminant Level

REI Consultants, Inc. Analytical Results

Date: *08-Apr-08*

CLIENT:	TOWN OF STUART	**WorkOrder:**	0802198
Client Sample ID:	WWTP EFF. 001	**Lab ID:**	0802198-01A
Project:	PERMIT RENEWAL	**Collection Date:**	2/4/2008 2:14:00 PM
Site ID:	STUART WWTP/VA	**Matrix:**	WASTE WATER

Analyses	Result	Units	Qual	PQL	MCL	Prep Date	Date Analyzed
SEMIVOLATILE ORGANIC COMPOUNDS			**E625**			Analyst: **CLS**	
Nitrobenzene	ND	mg/L		0.0103	NA	02/06/08 10:12 AM	02/06/08 9:20 PM
N-Nitrosodimethylamine	ND	mg/L		0.0103	NA	02/06/08 10:12 AM	02/06/08 9:20 PM
N-Nitrosodiphenylamine	ND	mg/L		0.0103	NA	02/06/08 10:12 AM	02/06/08 9:20 PM
N-Nitrosodi-n-propylamine	ND	mg/L		0.0103	NA	02/06/08 10:12 AM	02/06/08 9:20 PM
Pentachlorophenol	ND	mg/L		0.0103	NA	02/06/08 10:12 AM	02/06/08 9:20 PM
Phenol	ND	mg/L		0.0103	NA	02/06/08 10:12 AM	02/06/08 9:20 PM
Pyrene	ND	mg/L		0.0103	NA	02/06/08 10:12 AM	02/06/08 9:20 PM
1,2,4-Trichlorobenzene	ND	mg/L		0.0103	NA	02/06/08 10:12 AM	02/06/08 9:20 PM
2,4,6-Trichlorophenol	ND	mg/L		0.0103	NA	02/06/08 10:12 AM	02/06/08 9:20 PM
Surr: 2-Fluorophenol	47.7	%REC		21-110	NA	02/06/08 10:12 AM	02/06/08 9:20 PM
Surr: Phenol-d5	32.7	%REC		10-110	NA	02/06/08 10:12 AM	02/06/08 9:20 PM
Surr: 2,4,6-Tribromophenol	90.1	%REC		10-123	NA	02/06/08 10:12 AM	02/06/08 9:20 PM
Surr: Nitrobenzene-d5	93.9	%REC		35-114	NA	02/06/08 10:12 AM	02/06/08 9:20 PM
Surr: 2-Fluorobiphenyl	79.0	%REC		43-116	NA	02/06/08 10:12 AM	02/06/08 9:20 PM
Surr: 4-Terphenyl-d14	85.4	%REC		33-141	NA	02/06/08 10:12 AM	02/06/08 9:20 PM
VOLATILE ORGANIC COMPOUNDS			**E624**			Analyst: **AS**	
Bromochloromethane	ND	µg/L		5.00	NA		02/07/08 12:11 PM
Benzene	ND	µg/L		5.00	NA		02/07/08 12:11 PM
Acrolein	ND	µg/L		50.0	NA		02/07/08 12:11 PM
Bromodichloromethane	ND	µg/L		5.00	NA		02/07/08 12:11 PM
Acrylonitrile	ND	µg/L		50.0	NA		02/07/08 12:11 PM
Bromoform	ND	µg/L		5.00	NA		02/07/08 12:11 PM
Bromomethane	ND	µg/L		5.00	NA		02/07/08 12:11 PM
Carbon tetrachloride	ND	µg/L		5.00	NA		02/07/08 12:11 PM
Chlorobenzene	ND	µg/L		5.00	NA		02/07/08 12:11 PM
Chloroform	ND	µg/L		5.00	NA		02/07/08 12:11 PM
Dibromochloromethane	ND	µg/L		25.0	NA		02/07/08 12:11 PM
1,2-Dichloroethane	ND	µg/L		5.00	NA		02/07/08 12:11 PM
1,1-Dichloroethene	ND	µg/L		5.00	NA		02/07/08 12:11 PM
trans-1,2-Dichloroethene	ND	µg/L		5.00	NA		02/07/08 12:11 PM
1,2-Dichloropropane	ND	µg/L		5.00	NA		02/07/08 12:11 PM
cis-1,3-Dichloropropene	ND	µg/L		5.00	NA		02/07/08 12:11 PM
trans-1,3-Dichloropropene	ND	µg/L		5.00	NA		02/07/08 12:11 PM
Ethylbenzene	ND	µg/L		5.00	NA		02/07/08 12:11 PM
Methylene chloride	ND	µg/L		5.00	NA		02/07/08 12:11 PM
Tetrachloroethene	ND	µg/L		5.00	NA		02/07/08 12:11 PM
Toluene	ND	µg/L		5.00	NA		02/07/08 12:11 PM
1,1,2-Trichloroethane	ND	µg/L		5.00	NA		02/07/08 12:11 PM

Key:
- MCL Maximum Contaminant Level
- MDL Minimum Detection Limit
- NA Not Applicable
- ND Not Detected at the PQL or MDL
- PQL Practical Quantitation Limit
- TIC Tentatively Identified Compound, Estimated Concentration

Qualifiers:
- B Analyte detected in the associated Method Blank
- E Estimated Value above quantitation range
- H Holding times for preparation or analysis exceeded
- S Spike/Surrogate Recovery outside accepted recovery limits
- * Value exceeds Maximum Contaminant Level

REI Consultants, Inc. Analytical Results

Date: *08-Apr-08*

CLIENT:	TOWN OF STUART	**WorkOrder:**	0802198
Client Sample ID:	WWTP EFF. 001	**Lab ID:**	0802198-01A
Project:	PERMIT RENEWAL	**Collection Date:**	2/4/2008 2:14:00 PM
Site ID:	STUART WWTP/VA	**Matrix:**	WASTE WATER

Analyses	Result	Units	Qual	PQL	MCL	Prep Date	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			**E624**			Analyst: **AS**	
Trichloroethene	ND	µg/L		5.00	NA		02/07/08 12:11 PM
Vinyl chloride	ND	µg/L		5.00	NA		02/07/08 12:11 PM
Surr: Dibromofluoromethane	95.5	%REC		80-120	NA		02/07/08 12:11 PM
Surr: 1,2-Dichloroethane-d4	84.4	%REC		80-120	NA		02/07/08 12:11 PM
Surr: Toluene-d8	101	%REC		88-110	NA		02/07/08 12:11 PM
Surr: 4-Bromofluorobenzene	101	%REC		86-115	NA		02/07/08 12:11 PM
CYANIDE			**E335.4**			Analyst: **BA**	
Cyanide, Total	ND	mg/L		0.020	NA		02/08/08 12:30 PM
PHENOLICS			**E420.1**			Analyst: **BA**	
Phenolics	ND	mg/L		0.010	NA		02/07/08 12:45 PM

Key:
- MCL Maximum Contaminant Level
- MDL Minimum Detection Limit
- NA Not Applicable
- ND Not Detected at the PQL or MDL
- PQL Practical Quantitation Limit
- TIC Tentatively Identified Compound, Estimated Concentration

Qualifiers:
- B Analyte detected in the associated Method Blank
- E Estimated Value above quantitation range
- H Holding times for preparation or analysis exceeded
- S Spike/Surrogate Recovery outside accepted recovery limits
- * Value exceeds Maximum Contaminant Level

REI Consultants, Inc. Analytical Results

Date: *08-Apr-08*

CLIENT:	TOWN OF STUART	**WorkOrder:**	0802198
Client Sample ID:	WWTP EFF. 001/FIELD FILTERED	**Lab ID:**	0802198-01B
Project:	PERMIT RENEWAL	**Collection Date:**	2/4/2008 2:14:00 PM
Site ID:	STUART WWTP/VA	**Matrix:**	WASTE WATER

Analyses	Result	Units	Qual	PQL	MCL	Prep Date	Date Analyzed
METALS BY ICP			**E200.7**			Analyst: **JD**	
Antimony	ND	mg/L		0.0200	NA	02/07/08 9:10 AM	02/07/08 1:49 PM
Arsenic	ND	mg/L		0.0200	NA	02/07/08 9:10 AM	02/07/08 1:49 PM
Cadmium	ND	mg/L		0.0010	NA	02/07/08 9:10 AM	02/07/08 1:49 PM
Chromium	ND	mg/L		0.0050	NA	02/07/08 9:10 AM	02/07/08 1:49 PM
Copper	0.0080	mg/L		0.0050	NA	02/07/08 9:10 AM	02/07/08 1:49 PM
Lead	ND	mg/L		0.0100	NA	02/07/08 9:10 AM	02/07/08 1:49 PM
Nickel	ND	mg/L		0.0050	NA	02/07/08 9:10 AM	02/07/08 1:49 PM
Selenium	ND	mg/L		0.0200	NA	02/07/08 9:10 AM	02/07/08 1:49 PM
Silver	ND	mg/L		0.0050	NA	02/07/08 9:10 AM	02/07/08 1:49 PM
Zinc	0.156	mg/L		0.0200	NA	02/07/08 9:10 AM	02/11/08 9:40 AM
MERCURY, TOTAL			**E245.1**			Analyst: **AB**	
Mercury	ND	mg/L		0.0010	NA	02/07/08 9:31 AM	02/08/08 11:15 AM

Key:
- MCL Maximum Contaminant Level
- MDL Minimum Detection Limit
- NA Not Applicable
- ND Not Detected at the PQL or MDL
- PQL Practical Quantitation Limit
- TIC Tentatively Identified Compound, Estimated Concentration

Qualifiers:
- B Analyte detected in the associated Method Blank
- E Estimated Value above quantitation range
- H Holding times for preparation or analysis exceeded
- S Spike/Surrogate Recovery outside accepted recovery limits
- * Value exceeds Maximum Contaminant Level

Stuart WWTP
VPDES Permit No. VA0022985

Effluent pH Data for 90th Percentile Calculation

Days	May-06	Jun-06	Jul-06	Aug-06	Sep-06	Oct-06	Nov-06	Dec-06	Jan-07	Feb-07	Mar-07	Apr-07
1	6.50	6.84	6.71	6.72	6.63	7.01	6.68	6.46	6.62	6.38	6.62	6.72
2	6.49	6.91	6.77	6.63	6.83	6.48	6.59	6.66	6.43	6.33	6.68	6.85
3	6.24	6.34	6.98	6.86	6.84	6.61	6.75	6.76	6.60	6.73	6.84	6.85
4	6.51	6.53	6.90	6.99	6.91	6.36	6.61	7.29	6.75	6.71	6.63	6.96
5	6.68	6.52	6.88	6.99	7.06	6.50	6.68	6.48	6.54	6.22	6.54	6.95
6	6.50	6.47	6.73	6.46	6.69	6.48	6.82	6.14	6.56	6.39	6.54	7.01
7	6.42	6.55	6.78	6.63	7.04	6.58	6.25	6.69	6.46	6.30	6.48	7.01
8	6.63	7.05	6.77	6.70	6.94	6.65	6.29	6.63	6.52	6.26	6.58	6.98
9	6.60	7.14	6.82	6.61	6.82	7.20	6.52	6.56	6.38	6.54	6.55	6.90
10	6.86	6.54	6.57	6.71	6.83	7.23	6.78	6.41	6.53	6.36	6.55	6.91
11	7.03	6.62	6.48	7.20	6.29	6.74	6.81	6.11	6.44	6.43	6.59	6.94
12	6.43	6.99	6.75	7.03	6.29	6.42	6.81	6.42	6.83	6.44	6.67	7.08
13	6.20	6.99	8.63	7.03	6.51	6.55	6.49	6.56	6.86	6.26	6.71	6.92
14	6.25	6.62	7.04	7.03	6.75	7.02	6.60	6.58	6.87	6.24	6.78	6.93
15	6.16	6.44	7.03	7.02	6.84	6.62	6.29	6.83	6.69	6.46	6.80	6.99
16	6.49	6.39	7.04	7.12	6.64	6.91	6.62	6.42	6.70	6.51	6.99	6.95
17	6.61	6.61	6.59	6.81	6.84	6.48	6.60	6.38	6.70	6.41	6.92	6.95
18	6.67	6.69	7.03	7.03	6.88	6.26	6.39	6.67	6.86	6.36	6.86	7.02
19	7.04	6.92	7.19	6.93	7.35	6.67	6.37	6.61	6.74	6.54	6.81	6.99
20	6.56	6.62	7.36	6.86	6.82	6.73	6.29	6.65	7.07	6.69	6.67	6.95
21	6.77	6.73	7.21	7.19	6.92	6.82	6.36	6.86	6.90	6.47	6.69	6.95
22	6.70	6.55	7.19	6.92	7.01	6.70	6.31	6.54	7.10	6.35	6.76	7.02
23	6.90	6.80	6.56	7.02	6.91	6.11	6.57	6.67	6.44	6.66	6.62	6.99
24	6.68	6.98	6.94	6.82	7.07	6.30	6.34	6.74	6.47	6.74	6.74	6.98
25	6.81	6.81	7.03	7.09	7.19	6.66	6.34	6.31	6.34	6.77	6.73	6.98
26	6.91	6.67	6.86	6.99	7.18	6.71	6.41	7.13	6.38	6.33	6.73	6.96
27	6.90	6.39	6.63	6.84	7.17	6.81	6.29	6.57	6.33	6.30	6.79	7.12
28	6.80	6.67	6.91	6.81	7.17	6.87	6.26	6.28	6.28	6.71	6.99	7.06
29	6.68	6.82	6.86	6.82	7.05	6.33	6.53	6.47	6.26		6.84	6.96
30	6.51	7.08	6.89	6.74	6.99	6.50	6.63	6.57	6.19		7.01	7.09
31	6.77		6.86	6.98		6.28		6.96	6.45		6.96	6.90

Data are given in Standard Units.

90th Percentile pH	7.0 S.U.
10th Percentile pH	6.3 S.U.

Stuart WWTP
VA0022985

Effluent Hardness from TMP Results

Date	Hardness (mg/L) (Composite)
10/20/03	80
10/22/03	104
10/24/03	92
10/18/04	110
10/20/04	100
10/22/04	100
10/17/05	84
10/19/05	100
10/21/05	76
09/25/06	60
09/24/06	76
09/29/06	68
09/18/07	84
09/19/07	80
09/21/07	84
Mean	87

Attachment G

Wasteload and Limit Calculations

- Mixing Zone Output (MIXER)
- Wasteload Allocation Spreadsheet
- STATS Program Results

Mixing Zone Predictions for Town of Stuart WWTP

Effluent Flow = 0.60 MGD
Stream 7Q10 = 6.0 MGD
Stream 30Q10 = 7.9 MGD
Stream 1Q10 = 5.5 MGD
Stream slope = 0.0037 ft/ft
Stream width = 40 ft
Bottom scale = 3
Channel scale = 1

Mixing Zone Predictions @ 7Q10

Depth = .5001 ft
Length = 2677.08 ft
Velocity = .5107 ft/sec
Residence Time = .0607 days

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 7Q10 may be used.

Mixing Zone Predictions @ 30Q10

Depth = .5831 ft
Length = 2349.46 ft
Velocity = .5642 ft/sec
Residence Time = .0482 days

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 30Q10 may be used.

Mixing Zone Predictions @ 1Q10

Depth = .4768 ft
Length = 2787.7 ft
Velocity = .4951 ft/sec
Residence Time = 1.5642 hours

Recommendation:

A complete mix assumption is appropriate for this situation providing no more than 63.93% of the 1Q10 is used.

FRESHWATER
WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: Town of Stuart WWTP Permit No.: VA0022985

Receiving Stream: South Mayo River Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information

Mean Hardness (as CaCO3) =	25 mg/L
90% Temperature (Annual) =	21.2 deg C
90% Temperature (Wet season) =	18 deg C
90% Maximum pH =	8.4 SU
10% Maximum pH =	6.8 SU
Tier Designation (1 or 2) =	2
Public Water Supply (PWS) Y/N? =	n
Trout Present Y/N? =	n
Early Life Stages Present Y/N? =	y

Stream Flows

1Q10 (Annual) =	5.5 MGD
7Q10 (Annual) =	6 MGD
30Q10 (Annual) =	7.9 MGD
1Q10 (Wet season) =	8.9 MGD
30Q10 (Wet season)	13 MGD
30Q5 =	9.5 MGD
Harmonic Mean =	21 MGD
Annual Average =	MGD

Mixing Information

Annual - 1Q10 Mix =	69.93 %
- 7Q10 Mix =	100 %
- 30Q10 Mix =	100 %
Wet Season - 1Q10 Mix =	100 %
- 30Q10 Mix =	100 %

Effluent Information

Mean Hardness (as CaCO3) =	87 mg/L
90% Temp (Annual) =	21.2 deg C
90% Temp (Wet season) =	15.5 deg C
90% Maximum pH =	7 SU
10% Maximum pH =	6.3 SU
Discharge Flow =	0.6 MGD

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Acenapthene	0	--	--	na	2.7E+03	--	--	na	4.5E+04	--	--	na	2.7E+02	--	--	na	4.5E+03	--	--	na	**4.5E+03**
Acrolein	0	--	--	na	7.8E+02	--	--	na	1.3E+04	--	--	na	7.8E+01	--	--	na	1.3E+03	--	--	na	**1.3E+03**
Acrylonitrile[C]	0	--	--	na	6.6E+00	--	--	na	2.4E+02	--	--	na	6.6E-01	--	--	na	2.4E+01	--	--	na	**2.4E+01**
Aldrin [C]	0	3.0E+00	--	na	1.4E-03	2.2E+01	--	na	5.0E-02	7.5E-01	--	na	1.4E-04	7.6E+00	--	na	5.0E-03	**7.6E+00**	--	na	**5.0E-03**
Ammonia-N (mg/l) (Yearly)	0	1.28E+01	1.66E+00	na	--	9.5E+01	2.3E+01	na	--	2.67E+00	4.14E-01	na	--	2.7E+01	5.9E+00	na	--	**2.7E+01**	**5.9E+00**	na	--
Ammonia-N (mg/l) (High Flow)	0	8.44E+00	1.73E+00	na	--	1.3E+02	3.9E+01	na	--	2.11E+00	4.31E-01	na	--	3.3E+01	9.8E+00	na	--	**3.3E+01**	**9.8E+00**	na	--
Anthracene	0	--	--	na	1.1E+05	--	--	na	1.9E+06	--	--	na	1.1E+04	--	--	na	1.9E+05	--	--	na	**1.9E+05**
Antimony	0	--	--	na	4.3E+03	--	--	na	7.2E+04	--	--	na	4.3E+02	--	--	na	7.2E+03	--	--	na	**7.2E+03**
Arsenic	0	3.4E+02	1.5E+02	na	--	2.5E+03	1.7E+03	na	--	8.5E+01	3.8E+01	na	--	8.6E+02	4.1E+02	na	--	**8.6E+02**	**4.1E+02**	na	--
Barium	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Benzene [C]	0	--	--	na	7.1E+02	--	--	na	2.6E+04	--	--	na	7.1E+01	--	--	na	2.6E+03	--	--	na	**2.6E+03**
Benzidine[C]	0	--	--	na	5.4E-03	--	--	na	1.9E-01	--	--	na	5.4E-04	--	--	na	1.9E-02	--	--	na	**1.9E-02**
Benzo (a) anthracene [C]	0	--	--	na	4.9E-01	--	--	na	1.8E+01	--	--	na	4.9E-02	--	--	na	1.8E+00	--	--	na	**1.8E+00**
Benzo (b) fluoranthene [C]	0	--	--	na	4.9E-01	--	--	na	1.8E+01	--	--	na	4.9E-02	--	--	na	1.8E+00	--	--	na	**1.8E+00**
Benzo (k) fluoranthene [C]	0	--	--	na	4.9E-01	--	--	na	1.8E+01	--	--	na	4.9E-02	--	--	na	1.8E+00	--	--	na	**1.8E+00**
Benzo (a) pyrene [C]	0	--	--	na	4.9E-01	--	--	na	1.8E+01	--	--	na	4.9E-02	--	--	na	1.8E+00	--	--	na	**1.8E+00**
Bis2-Chloroethyl Ether	0	--	--	na	1.4E+01	--	--	na	2.4E+02	--	--	na	1.4E+00	--	--	na	2.4E+01	--	--	na	**2.4E+01**
Bis2-Chloroisopropyl Ether	0	--	--	na	1.7E+05	--	--	na	2.9E+06	--	--	na	1.7E+04	--	--	na	2.9E+05	--	--	na	**2.9E+05**
Bromoform [C]	0	--	--	na	3.6E+03	--	--	na	1.3E+05	--	--	na	3.6E+02	--	--	na	1.3E+04	--	--	na	**1.3E+04**
Butylbenzylphthalate	0	--	--	na	5.2E+03	--	--	na	8.8E+04	--	--	na	5.2E+02	--	--	na	8.8E+03	--	--	na	**8.8E+03**
Cadmium	0	1.1E+00	4.5E-01	na	--	8.4E+00	4.9E+00	na	--	2.6E-01	1.1E-01	na	--	2.7E+00	1.2E+00	na	--	**2.7E+00**	**1.2E+00**	na	--
Carbon Tetrachloride [C]	0	--	--	na	4.4E+01	--	--	na	1.6E+03	--	--	na	4.4E+00	--	--	na	1.6E+02	--	--	na	**1.6E+02**
Chlordane [C]	0	2.4E+00	4.3E-03	na	2.2E-02	1.8E+01	4.7E-02	na	7.9E-01	6.0E-01	1.1E-03	na	2.2E-03	6.1E+00	1.2E-02	na	7.9E-02	**6.1E+00**	**1.2E-02**	na	**7.9E-02**
Chloride	0	8.6E+05	2.3E+05	na	--	6.4E+06	2.5E+06	na	--	2.2E+05	5.8E+04	na	--	2.2E+06	6.3E+05	na	--	**2.2E+06**	**6.3E+05**	na	--
TRC	0	1.9E+01	1.1E+01	na	--	1.4E+02	1.2E+02	na	--	4.8E+00	2.8E+00	na	--	4.8E+01	3.0E+01	na	--	**4.8E+01**	**3.0E+01**	na	--
Chlorobenzene	0	--	--	na	2.1E+04	--	--	na	3.5E+05	--	--	na	2.1E+03	--	--	na	3.5E+04	--	--	na	**3.5E+04**

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Chlorodibromomethane[C]	0	--	--	na	3.4E+02	--	--	na	1.2E+04	--	--	na	3.4E+01	--	--	na	1.2E+03	--	--	na	1.2E+03
Chloroform [C]	0	--	--	na	2.9E+04	--	--	na	1.0E+06	--	--	na	2.9E+03	--	--	na	1.0E+05	--	--	na	1.0E+05
2-Chloronaphthalene	0	--	--	na	4.3E+03	--	--	na	7.2E+04	--	--	na	4.3E+02	--	--	na	7.2E+03	--	--	na	7.2E+03
2-Chlorophenol	0	--	--	na	4.0E+02	--	--	na	6.7E+03	--	--	na	4.0E+01	--	--	na	6.7E+02	--	--	na	6.7E+02
Chlorpyrifos	0	8.3E-02	4.1E-02	na	--	6.2E-01	4.5E-01	na	--	2.1E-02	1.0E-02	na	--	2.1E-01	1.1E-01	na	--	2.1E-01	1.1E-01	na	--
Chromium III	0	2.3E+02	2.8E+01	na	--	1.7E+03	3.1E+02	na	--	5.5E+01	7.0E+00	na	--	5.6E+02	7.7E+01	na	--	5.6E+02	7.7E+01	na	--
Chromium VI	0	1.6E+01	1.1E+01	na	--	1.2E+02	1.2E+02	na	--	4.0E+00	2.8E+00	na	--	4.1E+01	3.0E+01	na	--	4.1E+01	3.0E+01	na	--
Chromium, Total	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Chrysene [C]	0	--	--	na	4.9E-01	--	--	na	1.8E+01	--	--	na	4.9E-02	--	--	na	1.8E+00	--	--	na	1.8E+00
Copper	0	4.8E+00	3.3E+00	na	--	3.5E+01	3.6E+01	na	--	1.1E+00	8.1E-01	na	--	1.1E+01	9.0E+00	na	--	1.1E+01	9.0E+00	na	--
Cyanide	0	2.2E+01	5.2E+00	na	2.2E+05	1.6E+02	5.7E+01	na	3.6E+06	5.5E+00	1.3E+00	na	2.2E+04	5.6E+01	1.4E+01	na	3.6E+05	5.6E+01	1.4E+01	na	3.6E+05
DDD [C]	0	--	--	na	8.4E-03	--	--	na	3.0E-01	--	--	na	8.4E-04	--	--	na	3.0E-02	--	--	na	3.0E-02
DDE [C]	0	--	--	na	5.9E-03	--	--	na	2.1E-01	--	--	na	5.9E-04	--	--	na	2.1E-02	--	--	na	2.1E-02
DDT [C]	0	1.1E+00	1.0E-03	na	5.9E-03	8.2E+00	1.1E-02	na	2.1E-01	2.8E-01	2.5E-04	na	5.9E-04	2.8E+00	2.8E-03	na	2.1E-02	2.8E+00	2.8E-03	na	2.1E-02
Demeton	0	--	1.0E-01	na	--	--	1.1E+00	na	--	--	2.5E-02	na	--	--	2.8E-01	na	--	--	2.8E-01	na	--
Dibenz(a,h)anthracene [C]	0	--	--	na	4.9E-01	--	--	na	1.8E+01	--	--	na	4.9E-02	--	--	na	1.8E+00	--	--	na	1.8E+00
Dibutyl phthalate	0	--	--	na	1.2E+04	--	--	na	2.0E+05	--	--	na	1.2E+03	--	--	na	2.0E+04	--	--	na	2.0E+04
Dichloromethane (Methylene Chloride) [C]	0	--	--	na	1.6E+04	--	--	na	5.8E+05	--	--	na	1.6E+03	--	--	na	5.8E+04	--	--	na	5.8E+04
1,2-Dichlorobenzene	0	--	--	na	1.7E+04	--	--	na	2.9E+05	--	--	na	1.7E+03	--	--	na	2.9E+04	--	--	na	2.9E+04
1,3-Dichlorobenzene	0	--	--	na	2.6E+03	--	--	na	4.4E+04	--	--	na	2.6E+02	--	--	na	4.4E+03	--	--	na	4.4E+03
1,4-Dichlorobenzene	0	--	--	na	2.6E+03	--	--	na	4.4E+04	--	--	na	2.6E+02	--	--	na	4.4E+03	--	--	na	4.4E+03
3,3-Dichlorobenzidine[C]	0	--	--	na	7.7E-01	--	--	na	2.8E+01	--	--	na	7.7E-02	--	--	na	2.8E+00	--	--	na	2.8E+00
Dichlorobromomethane [C]	0	--	--	na	4.6E+02	--	--	na	1.7E+04	--	--	na	4.6E+01	--	--	na	1.7E+03	--	--	na	1.7E+03
1,2-Dichloroethane [C]	0	--	--	na	9.9E+02	--	--	na	3.6E+04	--	--	na	9.9E+01	--	--	na	3.6E+03	--	--	na	3.6E+03
1,1-Dichloroethylene	0	--	--	na	1.7E+04	--	--	na	2.9E+05	--	--	na	1.7E+03	--	--	na	2.9E+04	--	--	na	2.9E+04
1,2-trans-dichloroethylene	0	--	--	na	1.4E+05	--	--	na	2.4E+06	--	--	na	1.4E+04	--	--	na	2.4E+05	--	--	na	2.4E+05
2,4-Dichlorophenol	0	--	--	na	7.9E+02	--	--	na	1.3E+04	--	--	na	7.9E+01	--	--	na	1.3E+03	--	--	na	1.3E+03
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
1,2-Dichloropropane[C]	0	--	--	na	3.9E+02	--	--	na	1.4E+04	--	--	na	3.9E+01	--	--	na	1.4E+03	--	--	na	1.4E+03
1,3-Dichloropropene	0	--	--	na	1.7E+03	--	--	na	2.9E+04	--	--	na	1.7E+02	--	--	na	2.9E+03	--	--	na	2.9E+03
Dieldrin [C]	0	2.4E-01	5.6E-02	na	1.4E-03	1.8E+00	6.2E-01	na	5.0E-02	6.0E-02	1.4E-02	na	1.4E-04	6.1E-01	1.5E-01	na	5.0E-03	6.1E-01	1.5E-01	na	5.0E-03
Diethyl Phthalate	0	--	--	na	1.2E+05	--	--	na	2.0E+06	--	--	na	1.2E+04	--	--	na	2.0E+05	--	--	na	2.0E+05
Di-2-Ethylhexyl Phthalate [C]	0	--	--	na	5.9E+01	--	--	na	2.1E+03	--	--	na	5.9E+00	--	--	na	2.1E+02	--	--	na	2.1E+02
2,4-Dimethylphenol	0	--	--	na	2.3E+03	--	--	na	3.9E+04	--	--	na	2.3E+02	--	--	na	3.9E+03	--	--	na	3.9E+03
Dimethyl Phthalate	0	--	--	na	2.9E+06	--	--	na	4.9E+07	--	--	na	2.9E+05	--	--	na	4.9E+06	--	--	na	4.9E+06
Di-n-Butyl Phthalate	0	--	--	na	1.2E+04	--	--	na	2.0E+05	--	--	na	1.2E+03	--	--	na	2.0E+04	--	--	na	2.0E+04
2,4 Dinitrophenol	0	--	--	na	1.4E+04	--	--	na	2.4E+05	--	--	na	1.4E+03	--	--	na	2.4E+04	--	--	na	2.4E+04
2-Methyl-4,6-Dinitrophenol	0	--	--	na	7.65E+02	--	--	na	1.3E+04	--	--	na	7.7E+01	--	--	na	1.3E+03	--	--	na	1.3E+03
2,4-Dinitrotoluene [C]	0	--	--	na	9.1E+01	--	--	na	3.3E+03	--	--	na	9.1E+00	--	--	na	3.3E+02	--	--	na	3.3E+02
Dioxin (2,3,7,8-tetrachlorodibenzo-p-dioxin) (ppq)	0	--	--	na	1.2E-06	--	--	na	na	--	--	na	1.2E-07	--	--	na	1.2E-07	--	--	na	na
1,2-Diphenylhydrazine[C]	0	--	--	na	5.4E+00	--	--	na	1.9E+02	--	--	na	5.4E-01	--	--	na	1.9E+01	--	--	na	1.9E+01
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	2.4E+02	1.6E+00	6.2E-01	na	4.0E+03	5.5E-02	1.4E-02	na	2.4E+01	5.6E-01	1.5E-01	na	4.0E+02	5.6E-01	1.5E-01	na	4.0E+02
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	2.4E+02	1.6E+00	6.2E-01	na	4.0E+03	5.5E-02	1.4E-02	na	2.4E+01	5.6E-01	1.5E-01	na	4.0E+02	5.6E-01	1.5E-01	na	4.0E+02
Endosulfan Sulfate	0	--	--	na	2.4E+02	--	--	na	4.0E+03	--	--	na	2.4E+01	--	--	na	4.0E+02	--	--	na	4.0E+02
Endrin	0	8.6E-02	3.6E-02	na	8.1E-01	6.4E-01	4.0E-01	na	1.4E+01	2.2E-02	9.0E-03	na	8.1E-02	2.2E-01	9.9E-02	na	1.4E+00	2.2E-01	9.9E-02	na	1.4E+00
Endrin Aldehyde	0	--	--	na	8.1E-01	--	--	na	1.4E+01	--	--	na	8.1E-02	--	--	na	1.4E+00	--	--	na	1.4E+00

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Ethylbenzene	0	--	--	na	2.9E+04	--	--	na	4.9E+05	--	--	na	2.9E+03	--	--	na	4.9E+04	--	--	na	**4.9E+04**
Fluoranthene	0	--	--	na	3.7E+02	--	--	na	6.2E+03	--	--	na	3.7E+01	--	--	na	6.2E+02	--	--	na	**6.2E+02**
Fluorene	0	--	--	na	1.4E+04	--	--	na	2.4E+05	--	--	na	1.4E+03	--	--	na	2.4E+04	--	--	na	**2.4E+04**
Foaming Agents	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Guthion	0	--	1.0E-02	na	--	--	1.1E-01	na	--	--	2.5E-03	na	--	--	2.8E-02	na	--	--	**2.8E-02**	na	--
Heptachlor [c]	0	5.2E-01	3.8E-03	na	2.1E-03	3.9E+00	4.2E-02	na	7.6E-02	1.3E-01	9.5E-04	na	2.1E-04	1.3E+00	1.0E-02	na	7.6E-03	**1.3E+00**	**1.0E-02**	na	**7.6E-03**
Heptachlor Epoxide[c]	0	5.2E-01	3.8E-03	na	1.1E-03	3.9E+00	4.2E-02	na	4.0E-02	1.3E-01	9.5E-04	na	1.1E-04	1.3E+00	1.0E-02	na	4.0E-03	**1.3E+00**	**1.0E-02**	na	**4.0E-03**
Hexachlorobenzene[c]	0	--	--	na	7.7E-03	--	--	na	2.8E-01	--	--	na	7.7E-04	--	--	na	2.8E-02	--	--	na	**2.8E-02**
Hexachlorobutadiene[c]	0	--	--	na	5.0E+02	--	--	na	1.8E+04	--	--	na	5.0E+01	--	--	na	1.8E+03	--	--	na	**1.8E+03**
Hexachlorocyclohexane Alpha-BHC[c]	0	--	--	na	1.3E-01	--	--	na	4.7E+00	--	--	na	1.3E-02	--	--	na	4.7E-01	--	--	na	**4.7E-01**
Hexachlorocyclohexane Beta-BHC[c]	0	--	--	na	4.6E-01	--	--	na	1.7E+01	--	--	na	4.6E-02	--	--	na	1.7E+00	--	--	na	**1.7E+00**
Hexachlorocyclohexane Gamma-BHC[c] (Lindane)	0	9.5E-01	na	na	6.3E-01	7.0E+00	--	na	2.3E+01	2.4E-01	--	na	6.3E-02	2.4E+00	--	na	2.3E+00	**2.4E+00**	--	na	**2.3E+00**
Hexachlorocyclopentadiene	0	--	--	na	1.7E+04	--	--	na	2.9E+05	--	--	na	1.7E+03	--	--	na	2.9E+04	--	--	na	**2.9E+04**
Hexachloroethane[c]	0	--	--	na	8.9E+01	--	--	na	3.2E+03	--	--	na	8.9E+00	--	--	na	3.2E+02	--	--	na	**3.2E+02**
Hydrogen Sulfide	0	--	2.0E+00	na	--	--	2.2E+01	na	--	--	5.0E-01	na	--	--	5.5E+00	na	--	--	**5.5E+00**	na	--
Indeno (1,2,3-cd) pyrene [c]	0	--	--	na	4.9E-01	--	--	na	1.8E+01	--	--	na	4.9E-02	--	--	na	1.8E+00	--	--	na	**1.8E+00**
Iron	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Isophorone[c]	0	--	--	na	2.6E+04	--	--	na	9.4E+05	--	--	na	2.6E+03	--	--	na	9.4E+04	--	--	na	**9.4E+04**
Kepone	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	--	**0.0E+00**	na	--
Lead	0	2.9E+01	3.0E+00	na	--	2.2E+02	3.3E+01	na	--	6.7E+00	7.5E-01	na	--	6.8E+01	8.2E+00	na	--	**6.8E+01**	**8.2E+00**	na	--
Malathion	0	--	1.0E-01	na	--	--	1.1E+00	na	--	--	2.5E-02	na	--	--	2.8E-01	na	--	--	**2.8E-01**	na	--
Manganese	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Mercury	0	1.4E+00	7.7E-01	na	5.1E-02	1.0E+01	8.5E+00	na	8.6E-01	3.5E-01	1.9E-01	na	5.1E-03	3.6E+00	2.1E+00	na	8.6E-02	**3.6E+00**	**2.1E+00**	na	**8.6E-02**
Methyl Bromide	0	--	--	na	4.0E+03	--	--	na	6.7E+04	--	--	na	4.0E+02	--	--	na	6.7E+03	--	--	na	**6.7E+03**
Methoxychlor	0	--	3.0E-02	na	--	--	3.3E-01	na	--	--	7.5E-03	na	--	--	8.3E-02	na	--	--	**8.3E-02**	na	--
Mirex	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	--	**0.0E+00**	na	--
Monochlorobenzene	0	--	--	na	2.1E+04	--	--	na	3.5E+05	--	--	na	2.1E+03	--	--	na	3.5E+04	--	--	na	**3.5E+04**
Nickel	0	7.2E+01	7.4E+00	na	4.6E+03	5.3E+02	8.2E+01	na	7.7E+04	1.7E+01	1.9E+00	na	4.6E+02	1.7E+02	2.0E+01	na	7.7E+03	**1.7E+02**	**2.0E+01**	na	**7.7E+03**
Nitrate (as N)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Nitrobenzene	0	--	--	na	1.9E+03	--	--	na	3.2E+04	--	--	na	1.9E+02	--	--	na	3.2E+03	--	--	na	**3.2E+03**
N-Nitrosodimethylamine[c]	0	--	--	na	8.1E+01	--	--	na	2.9E+03	--	--	na	8.1E+00	--	--	na	2.9E+02	--	--	na	**2.9E+02**
N-Nitrosodiphenylamine[c]	0	--	--	na	1.6E+02	--	--	na	5.8E+03	--	--	na	1.6E+01	--	--	na	5.8E+02	--	--	na	**5.8E+02**
N-Nitrosodi-n-propylamine[c]	0	--	--	na	1.4E+01	--	--	na	5.0E+02	--	--	na	1.4E+00	--	--	na	5.0E+01	--	--	na	**5.0E+01**
Parathion	0	6.5E-02	1.3E-02	na	--	4.8E-01	1.4E-01	na	--	1.6E-02	3.3E-03	na	--	1.7E-01	3.6E-02	na	--	**1.7E-01**	**3.6E-02**	na	--
PCB-1016	0	--	1.4E-02	na	--	--	1.5E-01	na	--	--	3.5E-03	na	--	--	3.9E-02	na	--	--	**3.9E-02**	na	--
PCB-1221	0	--	1.4E-02	na	--	--	1.5E-01	na	--	--	3.5E-03	na	--	--	3.9E-02	na	--	--	**3.9E-02**	na	--
PCB-1232	0	--	1.4E-02	na	--	--	1.5E-01	na	--	--	3.5E-03	na	--	--	3.9E-02	na	--	--	**3.9E-02**	na	--
PCB-1242	0	--	1.4E-02	na	--	--	1.5E-01	na	--	--	3.5E-03	na	--	--	3.9E-02	na	--	--	**3.9E-02**	na	--
PCB-1248	0	--	1.4E-02	na	--	--	1.5E-01	na	--	--	3.5E-03	na	--	--	3.9E-02	na	--	--	**3.9E-02**	na	--
PCB-1254	0	--	1.4E-02	na	--	--	1.5E-01	na	--	--	3.5E-03	na	--	--	3.9E-02	na	--	--	**3.9E-02**	na	--
PCB-1260	0	--	1.4E-02	na	--	--	1.5E-01	na	--	--	3.5E-03	na	--	--	3.9E-02	na	--	--	**3.9E-02**	na	--
PCB Total[c]	0	--	--	na	1.7E-03	--	--	na	6.1E-02	--	--	na	1.7E-04	--	--	na	6.1E-03	--	--	na	**6.1E-03**

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Pentachlorophenol [C]	0	6.4E+00	5.1E+00	na	8.2E+01	4.7E+01	5.6E+01	na	3.0E+03	1.6E+00	1.3E+00	na	8.2E+00	1.7E+01	1.4E+01	na	3.0E+02	**1.7E+01**	**1.4E+01**	na	**3.0E+02**
Phenol	0	--	--	na	4.6E+06	--	--	na	7.7E+07	--	--	na	4.6E+05	--	--	na	7.7E+06	--	--	na	**7.7E+06**
Pyrene	0	--	--	na	1.1E+04	--	--	na	1.9E+05	--	--	na	1.1E+03	--	--	na	1.9E+04	--	--	na	**1.9E+04**
Radionuclides (pCi/l except Beta/Photon)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Gross Alpha Activity	0	--	--	na	1.5E+01	--	--	na	2.5E+02	--	--	na	1.5E+00	--	--	na	2.5E+01	--	--	na	**2.5E+01**
Beta and Photon Activity (mrem/yr)	0	--	--	na	4.0E+00	--	--	na	6.7E+01	--	--	na	4.0E-01	--	--	na	6.7E+00	--	--	na	**6.7E+00**
Strontium-90	0	--	--	na	8.0E+00	--	--	na	1.3E+02	--	--	na	8.0E-01	--	--	na	1.3E+01	--	--	na	**1.3E+01**
Tritium	0	--	--	na	2.0E+04	--	--	na	3.4E+05	--	--	na	2.0E+03	--	--	na	3.4E+04	--	--	na	**3.4E+04**
Selenium	0	2.0E+01	5.0E+00	na	1.1E+04	1.5E+02	5.5E+01	na	1.9E+05	5.0E+00	1.3E+00	na	1.1E+03	5.1E+01	1.4E+01	na	1.9E+04	**5.1E+01**	**1.4E+01**	na	**1.9E+04**
Silver	0	5.2E-01	--	na	--	3.9E+00	--	na	--	1.2E-01	--	na	--	1.2E+00	--	na	--	**1.2E+00**	--	na	--
Sulfate	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
1,1,2,2-Tetrachloroethane [C]	0	--	--	na	1.1E+02	--	--	na	4.0E+03	--	--	na	1.1E+01	--	--	na	4.0E+02	--	--	na	**4.0E+02**
Tetrachloroethylene [C]	0	--	--	na	8.9E+01	--	--	na	3.2E+03	--	--	na	8.9E+00	--	--	na	3.2E+02	--	--	na	**3.2E+02**
Thallium	0	--	--	na	6.3E+00	--	--	na	1.1E+02	--	--	na	6.3E-01	--	--	na	1.1E+01	--	--	na	**1.1E+01**
Toluene	0	--	--	na	2.0E+05	--	--	na	3.4E+06	--	--	na	2.0E+04	--	--	na	3.4E+05	--	--	na	**3.4E+05**
Total dissolved solids	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Toxaphene [C]	0	7.3E-01	2.0E-04	na	7.5E-03	5.4E+00	2.2E-03	na	2.7E-01	1.8E-01	5.0E-05	na	7.5E-04	1.9E+00	5.5E-04	na	2.7E-02	**1.9E+00**	**5.5E-04**	na	**2.7E-02**
Tributyltin	0	4.6E-01	6.3E-02	na	--	3.4E+00	6.9E-01	na	--	1.2E-01	1.6E-02	na	--	1.2E+00	1.7E-01	na	--	**1.2E+00**	**1.7E-01**	na	--
1,2,4-Trichlorobenzene	0	--	--	na	9.4E+02	--	--	na	1.6E+04	--	--	na	9.4E+01	--	--	na	1.6E+03	--	--	na	**1.6E+03**
1,1,2-Trichloroethane [C]	0	--	--	na	4.2E+02	--	--	na	1.5E+04	--	--	na	4.2E+01	--	--	na	1.5E+03	--	--	na	**1.5E+03**
Trichloroethylene [C]	0	--	--	na	8.1E+02	--	--	na	2.9E+04	--	--	na	8.1E+01	--	--	na	2.9E+03	--	--	na	**2.9E+03**
2,4,6-Trichlorophenol [C]	0	--	--	na	6.5E+01	--	--	na	2.3E+03	--	--	na	6.5E+00	--	--	na	2.3E+02	--	--	na	**2.3E+02**
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Vinyl Chloride [C]	0	--	--	na	6.1E+01	--	--	na	2.2E+03	--	--	na	6.1E+00	--	--	na	2.2E+02	--	--	na	**2.2E+02**
Zinc	0	4.6E+01	4.3E+01	na	6.9E+04	3.4E+02	4.8E+02	na	1.2E+06	1.1E+01	1.1E+01	na	6.9E+03	1.1E+02	1.2E+02	na	1.2E+05	**1.1E+02**	**1.2E+02**	na	**1.2E+05**

Notes:

1. All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
2. Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
3. Metals measured as Dissolved, unless specified otherwise
4. "C" indicates a carcinogenic parameter
5. Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information.
   Antidegradation WLAs are based upon a complete mix.
6. Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
   = (0.1(WQC - background conc.) + background conc.) for human health
7. WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens, Harmonic Mean for Carcinogens, and Annual Average for Dioxin. Mixing ratios may be substituted for stream flows where appropriate.

Metal	Target Value (SSTV)
Antimony	7.2E+03
Arsenic	2.5E+02
Barium	na
Cadmium	7.4E-01
Chromium III	4.6E+01
Chromium VI	1.6E+01
Copper	4.5E+00
Iron	na
Lead	4.9E+00
Manganese	na
Mercury	8.6E-02
Nickel	1.2E+01
Selenium	8.3E+00
Silver	4.7E-01
Zinc	4.4E+01

Note: do not use QL's lower than the minimum QL's provided in agency guidance

0.600 MGD DISCHARGE FLOW - STREAM MIX PER "Mix.exe"

Discharge Flow Used for WQS-WLA Calculations (MGI 0.600

	Stream Flows Allocated to Mix (MGD)		Total Mix Flows Stream + Discharge (MGD)	
	Dry Season	Wet Season	Dry Season	Wet Season
1Q10	3.846	8.900	4.446	9.500
7Q10	6.000	N/A	6.600	N/A
30Q10	7.900	13.000	8.500	13.600
30Q5	9.500	N/A	10.100	N/A
Harm. Mean	21.000	N/A	21.600	N/A
Annual Avg.	0.000	N/A	0.600	N/A

Stream/Discharge Mix Values

	Dry Season	Wet Season
1Q10 90th% Temp. Mix (deg C)	21.200	17.842
30Q10 90th% Temp. Mix (deg C)	21.200	17.890
1Q10 90th% pH Mix (SU)	7.771	7.998
30Q10 90th% pH Mix (SU)	7.968	8.085
1Q10 10th% pH Mix (SU)	6.689	N/A
7Q10 10th% pH Mix (SU)	6.722	N/A
	Calculated	Formula Inputs
1Q10 Hardness (mg/L as CaCO3)	33.4	33.4
7Q10 Hardness (mg/L as CaCO3)	30.6	30.6

Ammonia - Dry Season - Acute

90th Percentile pH (SU)	7.771
(7.204 - pH)	-0.567
(pH - 7.204)	0.567
Trout Present Criterion (mg N/I	8.531
Trout Absent Criterion (mg N/L	12.773
Trout Present?	n
Effective Criterion (mg N/L)	12.773

Ammonia - Dry Season - Chronic

90th Percentile Temp. (deg C)	21.200
90th Percentile pH (SU)	7.968
MIN	1.853
MAX	21.200
(7.688 - pH)	-0.280
(pH - 7.688)	0.280
Early LS Present Criterion (mg N	1.655
Early LS Absent Criterion (mg N/	1.655
Early Life Stages Present?	y
Effective Criterion (mg N/L)	1.655

Ammonia - Wet Season - Acute

90th Percentile pH (SU)	7.998
(7.204 - pH)	-0.794
(pH - 7.204)	0.794
Trout Present Criterion (mg N/I	5.636
Trout Absent Criterion (mg N/L	8.439
Trout Present?	n
Effective Criterion (mg N/L)	8.439

Ammonia - Wet Season - Chronic

90th Percentile Temp. (deg C)	17.890
90th Percentile pH (SU)	8.085
MIN	2.293
MAX	17.890
(7.688 - pH)	-0.397
(pH - 7.688)	0.397
Early LS Present Criterion (mg N	1.726
Early LS Absent Criterion (mg N/	1.726
Early Life Stages Present?	y
Effective Criterion (mg N/L)	1.726

0.600 MGD DISCHARGE FLOW - COMPLETE STREAM MIX

Discharge Flow Used for WQS-WLA Calculations (MGI 0.600

	100% Stream Flows Allocated to Mix (MGD)		Total Mix Flows Stream + Discharge (MGD)	
	Dry Season	Wet Season	Dry Season	Wet Season
1Q10	5.500	8.900	6.100	9.500
7Q10	6.000	N/A	6.600	N/A
30Q10	7.900	13.000	8.500	13.600
30Q5	9.500	N/A	10.100	N/A
Harm. Mean	21.000	N/A	21.600	N/A
Annual Avg.	0.000	N/A	0.600	N/A

Stream/Discharge Mix Values

	Dry Season	Wet Season
1Q10 90th% Temp. Mix (deg C)	21.200	17.842
30Q10 90th% Temp. Mix (deg C)	21.200	17.890
1Q10 90th% pH Mix (SU)	7.872	7.998
30Q10 90th% pH Mix (SU)	7.968	8.085
1Q10 10th% pH Mix (SU)	6.716	N/A
7Q10 10th% pH Mix (SU)	6.722	N/A
	Calculated	Formula Inputs
1Q10 Hardness (mg/L as CaCO3) =	31.098	31.098
7Q10 Hardness (mg/L as CaCO3) =	30.636	30.636

Ammonia - Dry Season - Acute

90th Percentile pH (SU)	7.872
(7.204 - pH)	-0.668
(pH - 7.204)	0.668
Trout Present Criterion (mg N/I	7.121
Trout Absent Criterion (mg N/L	10.663
Trout Present?	n
Effective Criterion (mg N/L)	10.663

Ammonia - Dry Season - Chronic

90th Percentile Temp. (deg C)	21.200
90th Percentile pH (SU)	7.968
MIN	1.853
MAX	21.200
(7.688 - pH)	-0.280
(pH - 7.688)	0.280
Early LS Present Criterion (mg N	1.655
Early LS Absent Criterion (mg N/	1.655
Early Life Stages Present?	y
Effective Criterion (mg N/L)	1.655

Ammonia - Wet Season - Acute

90th Percentile pH (SU)	7.998
(7.204 - pH)	-0.794
(pH - 7.204)	0.794
Trout Present Criterion (mg N/I	5.636
Trout Absent Criterion (mg N/L	8.439
Trout Present?	n
Effective Criterion (mg N/L)	8.439

Ammonia - Wet Season - Chronic

90th Percentile Temp. (deg C)	17.890
90th Percentile pH (SU)	8.085
MIN	2.293
MAX	17.890
(7.688 - pH)	-0.397
(pH - 7.688)	0.397
Early LS Present Criterion (mg N	1.726
Early LS Absent Criterion (mg N/	1.726
Early Life Stages Present?	y
Effective Criterion (mg N/L)	1.726

6/30/2008 4:24:03 PM

Facility = Town of Stuart WWTP
Chemical = ammonia as nitrogen (mg/L)
Chronic averaging period = 30
WLAa = 95
WLAc = 23
Q.L. = 5
# samples/mo. = 12
# samples/wk. = 3

Summary of Statistics:

observations = 1
Expected Value = 9
Variance = 29.16
C.V. = 0.6
97th percentile daily values = 21.9007
97th percentile 4 day average = 14.9741
97th percentile 30 day average= 10.8544
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

No Limit is required for this material

The data are:

9

6/30/2008 4:18:33 PM

Facility = Town of Stuart WWTP
Chemical = copper, dissolved (ug/L)
Chronic averaging period = 4
WLAa = 35
WLAc = 36
Q.L. = 5
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 6
Expected Value = 9.16666
Variance = 30.25
C.V. = 0.6
97th percentile daily values = 22.3063
97th percentile 4 day average = 15.2514
97th percentile 30 day average= 11.0554
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

No Limit is required for this material

The data are:

7
8
9.6
10.8
9.3
10.3

6/30/2008 4:19:44 PM

Facility = Town of Stuart WWTP
Chemical = zinc, dissolved (ug/L)
Chronic averaging period = 4
WLAa = 340
WLAc = 480
Q.L. = 5
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 6
Expected Value = 131.666
Variance = 6241
C.V. = 0.6
97th percentile daily values = 320.399
97th percentile 4 day average = 219.065
97th percentile 30 day average= 158.797
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

No Limit is required for this material

The data are:

129
156
143
117
120
125

7/1/2008 11:09:19 AM

Facility = Town of Stuart WWTP
Chemical = TRC (ug/L)
Chronic averaging period = 4
WLAa = 140
WLAc = 120
Q.L. = 100
# samples/mo. = 30
# samples/wk. = 8

Summary of Statistics:

observations = 1
Expected Value = 1000
Variance = 360000
C.V. = 0.6
97th percentile daily values = 2433.41
97th percentile 4 day average = 1663.79
97th percentile 30 day average= 1206.05
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Acute Toxicity
Maximum Daily Limit = 140
Average Weekly limit = 83.5107120263111
Average Monthly LImit = 69.386962941475

The data are:

1000

Attachment H

Regional Water Quality Model

"Model Run For C:\Documents and Settings\blfrance\My Documents\Working files\BECKY\PERMITS\VPDES\Stuart WWTP\Reissuance 2008\Data\Stuart WWTP model output 2008 12 new tkn.mod On 5/19/2008 9:35:45 AM"

"Model is for SOUTH MAYO RIVER."
"Model starts at the TOWN OF STUART WWTP discharge."

"Background Data"

"7Q10"	"cBOD5"	"TKN"	"DO"	"Temp"
"(mgd)"	"(mg/l)"	"(mg/l)"	"(mg/l)"	"deg C"
6,	2,	0,	7.727,	21.2

"Discharge/Tributary Input Data for Segment 1"

"Flow"	"cBOD5"	"TKN"	"DO"	"Temp"
"(mgd)"	"(mg/l)"	"(mg/l)"	"(mg/l)"	"deg C"
.6,	28,	15,	,5.6,	21.2

"Hydraulic Information for Segment 1"

"Length"	"Width"	"Depth"	"Velocity"
"(mi)"	"(ft)"	"(ft)"	"(ft/sec)"
.3788,	40,	.141,	1.81

"Initial Mix Values for Segment 1"

"Flow"	"DO"	"cBOD"	"nBOD"	"DOSat"	"Temp"
"(mgd)"	"(mg/l)"	"(mg/l)"	"(mg/l)"	"(mg/l)"	"deg C"
6.6,	7.534,	10.909,	4.724,	8.617,	21.2

"Rate Constants for Segment 1. - (All units Per Day)"

"k1"	"k1@T"	"k2"	"k2@T"	"kn"	"kn@T"	"BD"	"BD@T"
1.7,	1.796,	20,	20.577,	.55,	.603,	0,	0

"Output for Segment 1"
"Segment starts at TOWN OF STUART WWTP"

"Total"	"Segm."			
"Dist."	"Dist."	"DO"	"cBOD"	"nBOD"
"(mi)"	"(mi)"	"(mg/l)"	"(mg/l)"	"(mg/l)"
0,	0,	7.534,	10.909,	4.724
.1,	.1,	7.534,	10.843,	4.714
.2,	.2,	7.534,	10.777,	4.704
.3,	.3,	7.534,	10.712,	4.694
.379,	.379,	7.535,	10.661,	4.686

"END OF FILE"

REGIONAL MODELING SYSTEM VERSION 4.0
Model Input File for the Discharge to SOUTH MAYO RIVER.

File Information

File Name:	C:\Documents and Settings\blfrance\My Documents\Working files\BECKY\F
Date Modified:	May 19, 2008

Water Quality Standards Information

Stream Name:	SOUTH MAYO RIVER
River Basin:	Roanoke River Basin
Section:	3g
Class:	IV - Mountainous Zones Waters
Special Standards:	None

Background Flow Information

Gauge Used:	Reference Gauge
Gauge Drainage Area:	34.9 Sq.Mi.
Gauge 7Q10 Flow:	6 MGD
Headwater Drainage Area:	34.9 Sq.Mi.
Headwater 7Q10 Flow:	6 MGD (Net; includes Withdrawals/Discharges)
Withdrawal/Discharges:	0 MGD
Incremental Flow in Segments:	0.1719198 MGD/Sq.Mi.

Background Water Quality

Background Temperature:	21.2 Degrees C
Background cBOD5:	2 mg/l
Background TKN:	0 mg/l
Background D.O.:	7.727349 mg/l

Model Segmentation

Number of Segments:	1
Model Start Elevation:	1000 ft above MSL
Model End Elevation:	800 ft above MSL

REGIONAL MODELING SYSTEM VERSION 4.0

Model Input File for the Discharge to SOUTH MAYO RIVER.

Segment Information for Segment 1

Definition Information

Segment Definition:	A discharge enters.
Discharge Name:	TOWN OF STUART WWTP
VPDES Permit No.:	VA0022985

Discharger Flow Information

Flow:	0.6 MGD
cBOD5:	28 mg/l
TKN:	15 mg/l
D.O.:	5.6 mg/l
Temperature:	21.2 Degrees C

Geographic Information

Segment Length:	0.3788 miles
Upstream Drainage Area:	34.9 Sq.Mi.
Downstream Drainage Area:	0 Sq.Mi.
Upstream Elevation:	1000 Ft.
Downstream Elevation:	800 Ft.

Hydraulic Information

Segment Width:	40 Ft.
Segment Depth:	0.141 Ft.
Segment Velocity:	1.81 Ft./Sec.
Segment Flow:	6.6 MGD
Incremental Flow:	-6 MGD (Applied at end of segment.)

Channel Information

Cross Section:	Rectangular
Character:	Mostly Straight
Pool and Riffle:	No
Bottom Type:	Silt
Sludge:	None
Plants:	None
Algae:	None

"Model Run For C:\Documents and Settings\blfrance\My Documents\Working files\BECKY\PERMITS\VPDES\Stuart WWTP\Reissuance 2008\Data\Stuart WWTP model output 2008 original.mod On 5/1/2008 2:43:10 PM"

"Model is for SOUTH MAYO RIVER."
"Model starts at the TOWN OF STUART WWTP discharge."

"Background Data"

"7Q10"	"cBOD5"	"TKN"	"DO"	"Temp"
"(mgd)"	"(mg/l)"	"(mg/l)"	"(mg/l)"	"deg C"
6,	2,	0,	7.727,	21.2

"Discharge/Tributary Input Data for Segment 1"

"Flow"	"cBOD5"	"TKN"	"DO"	"Temp"
"(mgd)"	"(mg/l)"	"(mg/l)"	"(mg/l)"	"deg C"
.6,	28,	12,	,0,	21.2

Volatile and degradation

"Hydraulic Information for Segment 1"

"Length"	"Width"	"Depth"	"Velocity"
"(mi)"	"(ft)"	"(ft)"	"(ft/sec)"
.3788,	40,	.141,	1.81

"Initial Mix Values for Segment 1"

"Flow"	"DO"	"cBOD"	"nBOD"	"DOSat"	"Temp"
"(mgd)"	"(mg/l)"	"(mg/l)"	"(mg/l)"	"(mg/l)"	"deg C"
6.6,	7.025,	10.909,	3.543,	8.617,	21.2

"Rate Constants for Segment 1. - (All units Per Day)"

"k1",	"k1@T",	"k2",	"k2@T",	"kn",	"kn@T",	"BD",	"BD@T"
1.7,	1.796,	20,	20.577,	.55,	.603,	0,	0

"Output for Segment 1"
"Segment starts at TOWN OF STUART WWTP"

"Total Dist."	"Segm. Dist."	"DO"	"cBOD"	"nBOD"
"(mi)"	"(mi)"	"(mg/l)"	"(mg/l)"	"(mg/l)"
0,	0,	7.025,	10.909,	3.543
.1,	.1,	7.061,	10.843,	3.536
.2,	.2,	7.095,	10.777,	3.529
.3,	.3,	7.127,	10.712,	3.522
.379,	.379,	7.151,	10.661,	3.516

"END OF FILE"

Attachment I

Sewage Sludge Data

Stuart WWTP
VA0022985

Field S01 Sludge Monitoring (mg/kg)

	As		Cd		Cu		Pb		Hg		Mb		Ni		Se		Zn	
Due Date	**Average**	**Max**	**Average**	**Max**	**Average**	**Max**	**Max**	**Average**	**Max**	**Average**	**Max**	**Average**	**Max**	**Average**	**Max**	**Average**	**Max**	**Average**
Permit Limits	**41**	**75**	**39**	**85**	**1500**	**4300**	**840**	**300**	**57**	**17**	**75**	**NA**	**420**	**420**	**100**	**100**	**7500**	**2800**
2004	1.25	1.43	2	2.3	455	496	59	51	1.81	1.73	25		33	25.5	3.42	3.35	961	868.5
2005	1.10	1.10	1.95	2.0	519	555	<18	<11.5	2.41	2.2	16		23	21.5	5.89	4.98	907	894.5
2006	1.35	1.5	3.0	3.0	634	668	91	45	3.0	2.95	7		26	22.5	4.6	3.9	1200	1175
2007	2.9	2.9	1.0	2.0	690.0	817	59	48	3.5	2.6	6.0		25	23.0	5.4	5.4	1290	1220

Attachment J

Toxics Management Program Justification Memorandum

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY
West Central Regional Office

3019 Peters Creek Road Roanoke, VA 24019

SUBJECT: TMP Justification for Town of Stuart WWTP
VPDES Permit No. VA0022985

TO: Permit File

FROM: Becky L. France, Environmental Engineer Senior

DATE: May 21, 2008

DISCUSSION:

Attached are the results of the previous data reviews that cover all of the available data for outfall 001. Acute and chronic tests were performed using *Pimephales promelas* for the acute test and *Ceriodaphnia dubia* for the chronic test. The facility has not failed either an acute or chronic toxicity test since the permit reissuance. Results from the initial four quarters testing in the previous permit term indicated that *Pimephales promelas* was the most sensitive species for the acute toxicity tests and *Ceriodaphnia dubia* was the most sensitive species for the chronic toxicity tests.

RECOMMENDATIONS:

The toxicity testing acute and chronic wasteload allocation and NOEC endpoint calculations are included on the attached spreadsheet. The acute and chronic wasteload allocations and test results were entered into the STATS program to determine if a limit is needed. The output from this program indicated that a limit is not needed. In accordance with Guidance Memorandum 00-2012, annual whole effluent toxicity testing will continue for the Town of Stuart WWTP.

Guidance Memorandum 00-2012 designates criteria to allow testing of only one species per test type rather than two species. The criteria designate one of two conditions that need to be met: (1) the average percent survival in 100% effluent for all the acceptable acute tests during a permit term with a particular species is $\geq$ 100, or (2) the average percent survival in 100% effluent for all of the acceptable chronic tests during a permit term with a particular species is $\geq$ 80% and the secondary endpoint for reproduction or growth is an NOEC=100%. If the criteria indicate that there is no possibility for toxicity from tests with the evaluated species, annual testing with the other tested species should be sufficient. A summary of the acute and chronic toxicity testing data is found in Tables 2 and 3. Based upon these test results, the criteria found in Guidance 00-2012 are not meet and the acute and chronic toxicity testing will be required using both *Ceriodaphnia dubia* and *Pimephales promelas*.

Table 1 **FACILITY INFORMATION**

FACILITY:	Town of Stuart WWTP		
LOCATION:	Stuart, Virginia		
VPDES PERMIT NUMBER:	VA0022985	**Expiration Date:**	08/20/08
SIC CODE/DESCRIPTION:	4952/Sewerage Systems		
DESIGN FLOW:	**Outfall 001** = 0.60 MGD		

RECEIVING STREAM/CRITICAL FLOWS/IWC:

Receiving Stream:	South Mayo River		
River Basin:	Roanoke River		
River Subbasin:	Roanoke River		
Section:	3g		
Class:	IV		
Special Standards:	None		
1Q10 =	5.5 MGD	30Q5 =	9.5 MGD
7Q10 =	6.0 MGD	Harmonic mean =	21 MGD

WASTEWATER AND TREATMENT:

This plant operates under the conventional activated sludge treatment process, which consists of screening, activated sludge aeration, secondary clarification, chlorine disinfection, dechlorination, sludge digestion and thickening. The wastewater treatment process consists of the following in order of treatment:

Biological Treatment Using Extended Mode of Activated Sludge Process

Screening (mechanical bar screen and aerated grit collector)
Aeration
Secondary Clarification
Chlorination
Dechlorination
Final Effluent Flow Metering (Parshall Flume)

Solids Handling

Return Sludge to Aeration Basins
Thickener
Aerobic Sludge Digester
Dewatering
Land Application

PROPOSED TMP REQUIREMENTS:

BIOLOGICAL

Annual acute and chronic toxicity tests for the duration of the permit. The acute tests shall be 48-hour static tests using *C. dubia* and *P. promelas.* The chronic tests shall be 3-brood survival and reproduction tests using C. *dubia* and *P. promelas.*

Table 2
Acute TMP Test Data
Town of Stuart WWTP
VPDES Permit No. VA0022985

Test Dates	Test Organism	LC_{50}	% Survival in 100% Effluent	Testing Lab
10/21-10/23/03 (1st Annual)	*P. promelas*	>100	80	Prochem Analytical
10/21-10/23/04 (2nd Annual)	*P. promelas*	>100	100	Olver Inc.
10/19-10/21/05 (3rd Annual)	*P. promelas*	>100	90	Olver Inc.
9/27-9/29/06 (4th Annual)	*P. promelas*	>100	100	Olver Inc.
9/19/-9/21/07 (5th Annual	*P. promelas*	>100	100	Olver Inc.

Table 3
Chronic TMP Test Data
Town of Stuart WWTP
VPDES Permit No. VA0022985

Test Dates	Test Organism	% NOEC Survival	% NOEC Reproduction	% Survival in 100% Effluent	Testing Lab
10/21-10/27/03 (1st Annual)	*C. dubia*	100	100	100	Prochem Analytical
10/19-10/23/04 (2nd Annual)	*C. dubia*	100	100	100	Olver Inc.
10/17-10/23/05 (3rd Annual)	*C. dubia*	100	7.2	100	Olver, Inc.
9/25-10/1/06 (4th Annual)	*C. dubia*	100	100	100	Olver, Inc.
9/18-9/24/07 (5th Annual)	*C. dubia*	100	100	90	Olver, Inc.

Spreadsheet for determination of WET test endpoints or WET limits

Excel 97
Revision Date: 01/10/05
File: WETLIM10.xls
(MIX.EXE required also)

Acute Endpoint/Permit Limit			Use as LC_{50} in Special Condition, as TUa on DMR				
ACUTE	1.608832152	TUa	LC_{50} =	63	% Use as	1.58	TUa
ACUTE WLAa	2.058075		Note: Inform the permittee that if the mean of the data exceeds this TUa:	1.0	a limit may result using WLA.EXE		

Chronic Endpoint/Permit Limit			Use as NOEC in Special Condition, as TUc on DMR				
CHRONIC	16.08832152	TU_c	NOEC =	7	% Use as	14.28	TU_c
BOTH*	20.5807505	TU_c	NOEC =	5	% Use as	20.00	TU_c
AML	16.08832152	TU_c	NOEC =	7	% Use as	14.28	TU_c
ACUTE WLAa,c	20.58075		Note: Inform the permittee that if the mean of the data exceeds this TUc:			6.61140999	
CHRONIC WLAc	11		a limit may result using WLA.EXE				

* Both means acute expressed as chronic

Enter data in the cells with blue type:

Entry Date:	06/25/08	
Facility Name:	Town of Stuart WWTP	
VPDES Number:	VA0022985	
Outfall Number:	001	
Plant Flow:	0.6	MGD
Acute 1Q10:	5.5	MGD
Chronic 7Q10:	6	MGD

% Flow to be used from MIX.EXE
63.93 %
100 %

Difuser /modeling study?
Enter Y/N: N
Acute :1
Chronic :1

Are data available to calculate CV? (Y/N): N (Minimum of 10 data points, same species, needed) — Go to Page 2
Are data available to calculate ACR? (Y/N): N (NOEC<LC50, do not use greater/less than data) — Go to Page 3

IWC_a	14.57672825	%	Plant flow/plant flow + 1Q10
IWC_c	9.090909091	%	Plant flow/plant flow + 7Q10
Dilution, acute	6.86025		100/IWCa
Dilution, chronic	11		100/IWCc
WLA_a	2.058075		Instream criterion (0.3 TUa) X's Dilution, acute
WLA_c	11		Instream criterion (1.0 TUc) X's Dilution, chronic
$WLA_{a,c}$	20.58075		ACR X's WLA_a - converts acute WLA to chronic units
ACR -acute/chronic ratio	10		LC50/NOEC (Default is 10 - if data are available, use tables Page 3)
CV-Coefficient of variation	0.6		Default of 0.6 - if data are available, use tables Page 2)
Constants eA	0.4109447		Default = 0.41
eB	0.6010373		Default = 0.60
eC	2.4334175		Default = 2.43
eD	2.4334175		Default = 2.43 (1 samp) No. of sample: 1

NOTE: If the IWCa is >33%, specify the NOAEC = 100% test/endpoint for use

****The Maximum Daily Limit is calculated from the lowest LTA, X's eC. The LTAa,c and MDL using it are driven by the ACR.**

$LTA_{a,c}$	8.457550135	WLAa,c X's eA				
LTA_c	6.6114103	WLAc X's eB				
MDL** with $LTA_{a,c}$	20.5807505	TU_c	NOEC =	4.858909	(Protects from acute/chronic toxicity)	
MDL** with LTA_c	16.08832152	TU_c	NOEC =	6.215689	(Protects from chronic toxicity)	
AML with lowest LTA	16.08832152	TU_c	NOEC =	6.215689	Lowest LTA X's eD	

Rounded NOEC's		
NOEC =	5	%
NOEC =	7	%
NOEC =	7	

IF ONLY ACUTE ENDPOINT/LIMIT IS NEEDED, CONVERT MDL FROM TU_c to TU_a

MDL with $LTA_{a,c}$	2.05807505	TU_a	LC50 =	48.589093	%
MDL with LTA_c	1.608832152	TU_a	LC50 =	62.156888	%

Rounded LC50's		
LC50 =	49	%
LC50 =	63	

Page 2 - Follow the directions to develop a site specific CV (coefficient of variation)

IF YOU HAVE AT LEAST 10 DATA POINTS THAT ARE QUANTIFIABLE (NOT "<" OR ">") FOR A SPECIES, ENTER THE DATA IN EITHER COLUMN "G" (VERTEBRATE) OR COLUMN "J" (INVERTEBRATE). THE 'CV' WILL BE PICKED UP FOR THE CALCULATIONS BELOW. THE DEFAULT VALUES FOR eA, eB, AND eC WILL CHANGE IF THE 'CV' IS ANYTHING OTHER THAN 0.6.

Coefficient of Variation for effluent tests

CV = 0.6 (Default 0.6)

δ^2 = 0.3074847

δ = 0.554513029

Using the log variance to develop eA
(P. 100, step 2a of TSD)

Z = 1.881 (97% probability stat from table

A = -0.88929666

eA = 0.410944686

Using the log variance to develop eB
(P. 100, step 2b of TSD)

δ_4^2 = 0.086177696

δ_4 = 0.293560379

B = -0.50909823

eB = 0.601037335

Using the log variance to develop eC
(P. 100, step 4a of TSD)

δ^2 = 0.3074847

δ = 0.554513029

C = 0.889296658

eC = 2.433417525

Using the log variance to develop eD
(P. 100, step 4b of TSD)

n = 1 This number will most likely stay as "1", for 1 sample/month.

δ_n^2 = 0.3074847

δ_n = 0.554513029

D = 0.889296658

eD = 2.433417525

	Vertebrate IC_{25} Data or LC_{50} Data **********	LN of data		Invertebrate IC_{25} Data or LC_{50} Data **********	LN of data
1	0		1	0	
2			2		
3			3		
4			4		
5			5		
6			6		
7			7		
8			8		
9			9		
10			10		
11			11		
12			12		
13			13		
14			14		
15			15		
16			16		
17			17		
18			18		
19			19		
20			20		
St Dev	NEED DATA	NEED DATA	St Dev	NEED DATA	NEED DATA
Mean	0	0	Mean	0	0
Variance	0	0.000000	Variance	0	0.000000
CV	0		CV	0	

Page 3 - Follow directions to develop a site specific ACR (Acute to Chronic Ratio)

To determine Acute/Chronic Ratio (ACR), insert usable data below. Usable data is defined as valid paired test results, acute and chronic, tested at the same temperature, same species. The chronic NOEC must be less than the acute LC_{50}, since the ACR divides the LC_{50} by the NOEC. LC_{50}'s >100% should not be used.

Table 1. ACR using Vertebrate data

Set #	LC_{50}	NOEC	Test ACR	Logarithm	Geomean	Antilog	ACR to Use
1	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
2	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
3	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
4	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
5	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
6	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
7	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
8	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
9	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
10	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
				ACR for vertebrate data:			0

Table 1. Result:	Vertebrate ACR	0
Table 2. Result:	Invertebrate ACR	0
	Lowest ACR	Default to 10

Table 2. ACR using Invertebrate data

Set #	LC_{50}	NOEC	Test ACR	Logarithm	Geomean	Antilog	ACR to Use
1	#N/A	37	#N/A	#N/A	#N/A	#N/A	NO DATA
2	#N/A	37	#N/A	#N/A	#N/A	#N/A	NO DATA
3	#N/A	37	#N/A	#N/A	#N/A	#N/A	NO DATA
4	#N/A	100	#N/A	#N/A	#N/A	#N/A	NO DATA
5	#N/A	100	#N/A	#N/A	#N/A	#N/A	NO DATA
6	#N/A	100	#N/A	#N/A	#N/A	#N/A	NO DATA
7	#N/A	100	#N/A	#N/A	#N/A	#N/A	NO DATA
8	#N/A	100	#N/A	#N/A	#N/A	#N/A	NO DATA
9	83.7	50	1.674	0.515216	#N/A	#N/A	NO DATA
10	#N/A	25	#N/A	#N/A	#N/A	#N/A	NO DATA
				ACR for vertebrate data:			0

Table 3. Convert LC_{50}'s and NOEC's to Chronic TU's

for use in WLA.EXE — ACR used: 10

	Enter LC_{50}	TUc	Enter NOEC	TUc
1		NO DATA		NO DATA
2		NO DATA		NO DATA
3		NO DATA		NO DATA
4		NO DATA		NO DATA
5		NO DATA		NO DATA
6		NO DATA		NO DATA
7		NO DATA		NO DATA
8		NO DATA		NO DATA
9		NO DATA		NO DATA
10		NO DATA		NO DATA
11		NO DATA		NO DATA
12		NO DATA		NO DATA
13		NO DATA		NO DATA
14		NO DATA		NO DATA
15		NO DATA		NO DATA
16		NO DATA		NO DATA
17		NO DATA		NO DATA
18		NO DATA		NO DATA
19		NO DATA		NO DATA
20		NO DATA		NO DATA

If WLA.EXE determines that an acute limit is needed, you need to convert the TUc answer you get to TUa and then an LC50, enter it here:

NO DATA	$\%LC_{50}$
NO DATA	TUa

Table 4. DILUTION SERIES TO RECOMMEND

	Monitoring % Effluent	Monitoring TUc	Limit % Effluent	Limit TUc
Dilution series based on data mean	15.1	6.61141		
Dilution series to use for limit			7	14.285714
Dilution factor to recommend:	0.3889134		0.2645751	
Dilution series to recommend:	100.0	1.00	100.0	1.00
	38.9	2.57	26.5	3.78
	15.1	6.61	7.0	14.29
	5.9	17.00	1.9	53.99
	2.29	43.71	0.5	204.08
Extra dilutions if needed	0.89	112.39	0.1	771.36
	0.35	288.99	0.0	2915.45

Cell: I9
Comment:
This is assuming that the data are Type 2 data (none of the data in the data set are censored - "<" or ">").

Cell: K18
Comment: This is assuming that the data are Type 2 data (none of the data in the data set are censored - "<" or ">").

Cell: J22
Comment: Remember to change the "N" to "Y" if you have ratios entered, otherwise, they won't be used in the calculations.

Cell: C40
Comment:
If you have entered data to calculate an ACR on page 3, and this is still defaulted to "10", make sure you have selected "Y" in cell E21

Cell: C41
Comment: If you have entered data to calculate an effluent specific CV on page 2, and this is still defaulted to "0.6", make sure you have selected "Y" in cell E20

Cell: L48
Comment:
See Row 151 for the appropriate dilution series to use for these NOEC's

Cell: G62
Comment:
Vertebrates are:
Pimephales promelas
Oncorhynchus mykiss
Cyprinodon variegatus

Cell: J62
Comment:
Invertebrates are;
Ceriodaphnia dubia
Mysidopsis bahia

Cell: C117
Comment: Vertebrates are:

Pimephales promelas
Cyprinodon variegatus

Cell: M119
Comment: The ACR has been picked up from cell C34 on Page 1. If you have paired data to calculate an ACR, enter it in the tables to the left, and make sure you have a "Y" in cell E21 on Page 1. Otherwise, the default of 10 will be used to convert your acute data.

Cell: M121
Comment: If you are only concerned with acute data, you can enter it in the NOEC column for conversion and the number calculated will be equivalent to the TUa. The calculation is the same: 100/NOEC = TUc or 100/LC50 = TUa.

Cell: C138
Comment: Invertebrates are:

Ceriodaphnia dubia
Mysidopsis bahia

Attachment K

Public Notice

PUBLIC NOTICE – Environmental Permit

PURPOSE OF NOTICE: To seek public comment on a draft permit from the Department of Environmental Quality that will allow the release of treated wastewater into a water body in Patrick County.
PUBLIC COMMENT PERIOD: 30 days following the public notice issue date; comment period ends 4:30 pm of last day
PERMIT NAME: Virginia Pollutant Discharge Elimination System – Wastewater issued by DEQ, under the authority of the State Water Control Board
NAME, ADDRESS, AND PERMIT NUMBER OF APPLICANT: Town of Stuart, PO Box 422, Stuart, Virginia 24171, VA0022985
NAME AND ADDRESS OF FACILITY: Town of Stuart WWTP, 709 Commerce Street, Stuart, Virginia 24171
PROJECT DESCRIPTION: The Town of Stuart applied for a reissuance of a permit for the wastewater treatment plant in the Town of Stuart. The applicant proposes to release treated sewage at a rate of 0.60 MGD from the current facility into a water body. A sludge management plan has been submitted proposing application of approximately 72.71 dry metric tons of sludge per year to agricultural lands. Sludge application will be made at or below standard agronomic rates. The sludge management plan identifies sites on approximately 113 acres identified as the KP Hill Dairy Inc. These sites are owned by Mr. Wayne M. Kirkpatrick. The facility proposes to release the treated sewage into the South Mayo River in Patrick County in the Upper South Mayo River/Russell Creek Watershed (VAW-L43R). A watershed is the land area drained by a river and its incoming streams. The permit will limit the following pollutants to amounts that protect water quality: nutrients, organic matter, solids.
HOW TO COMMENT: DEQ accepts comments by e-mail, fax, or postal mail. All comments must be in writing and be received by DEQ during the comment period. The public also may request a public hearing.
WRITTEN COMMENTS MUST INCLUDE: DEQ accepts comments by e-mail, fax, or postal mail. All comments must be in writing and be received by DEQ during the comment period. Written comments must include: 1) The names, mailing addresses, and telephone numbers of the person commenting and of all people represented by the citizen. 2) If a public hearing is requested, the reason for holding a hearing, including associated concerns. 3) A brief, informal statement regarding the extent of the interest of the person commenting, including how the operation of the facility or activity affects the citizen. DEQ may hold a public hearing, including another comment period, if a public response is significant and there are substantial, disputed issues relevant to the proposed permit. The public may review the draft permit and application at the DEQ office named below.
CONTACT OF PUBLIC COMMENTS, DOCUMENT REQUESTS, AND ADDITIONAL INFORMATION:
NAME: Becky L. France; ADDRESS: Virginia Department of Environmental Quality, West Central Regional Office, 3019 Peters Creek Road, Roanoke, VA 24019-2738; PHONE: (540) 562-6700; E-MAIL ADDRESS: blfrance@deq.virginia.gov; FAX: (540) 562-6725

Attachment L

EPA Checksheet

Revised 2/2003

State "FY2003 Transmittal Checklist" to Assist in Targeting Municipal and Industrial Individual NPDES Draft Permits for Review

Part I. State Draft Permit Submission Checklist

In accordance with the MOA established between the Commonwealth of Virginia and the United States Environmental Protection Agency, Region III, the Commonwealth submits the following draft National Pollutant Discharge Elimination System (NPDES) permit for Agency review and concurrence.

Facility Name: Town of Stuart WWTP

NPDES Permit Number: VA0022985

Permit Writer Name: Becky L. France

Date: 5/21/08

Major [ ] **Minor** [X] **Industrial** [ ] **Municipal** [X]

I.A. Draft Permit Package Submittal Includes:	**Yes**	**No**	**N/A**
1. Permit Application?	X		
2. Complete Draft Permit (for renewal or first time permit – entire permit, including boilerplate information)?	X		
3. Copy of Public Notice?	X		
4. Complete Fact Sheet?	X		
5. A Priority Pollutant Screening to determine parameters of concern?	X		
6. A Reasonable Potential analysis showing calculated WQBELs?	X		
7. Dissolved Oxygen calculations?	X		
8. Whole Effluent Toxicity Test summary and analysis?	X		
9. Permit Rating Sheet for new or modified industrial facilities?			X

I.B. Permit/Facility Characteristics	**Yes**	**No**	**N/A**
1. Is this a new, or currently unpermitted facility?		X	
2. Are all permissible outfalls (including combined sewer overflow points, non-process water and storm water) from the facility properly identified and authorized in the permit?	X		
3. Does the fact sheet **or** permit contain a description of the wastewater treatment process?	X		

I.B. Permit/Facility Characteristics – cont. (FY2003)	Yes	No	N/A
4. Does the review of PCS/DMR data for at least the last 3 years indicate significant non-compliance with the existing permit?		X	
5. Has there been any change in streamflow characteristics since the last permit was developed?	X		
6. Does the permit allow the discharge of new or increased loadings of any pollutants?		X	
7. Does the fact sheet **or** permit provide a description of the receiving water body(s) to which the facility discharges, including information on low/critical flow conditions and designated/existing uses?	X		
8. Does the facility discharge to a 303(d) listed water?		X	
a. Has a TMDL been developed and approved by EPA for the impaired water?			X
b. Does the record indicate that the TMDL development is on the State priority list and will most likely be developed within the life of the permit?			X
c. Does the facility discharge a pollutant of concern identified in the TMDL or 303(d) listed water?			X
9. Have any limits been removed, or are any limits less stringent, than those in the current permit?		X	
10. Does the permit authorize discharges of storm water? **no exposure exemption granted**			X
11. Has the facility substantially enlarged or altered its operation or substantially increased its flow or production?		X	
12. Are there any production-based, technology-based effluent limits in the permit?		X	
13. Do any water quality-based effluent limit calculations differ from the State's standard policies or procedures?		X	
14. Are any WQBELs based on an interpretation of narrative criteria?		X	
15. Does the permit incorporate any variances or other exceptions to the State's standards or regulations?		X	
16. Does the permit contain a compliance schedule for any limit or condition?	X		
17. Is there a potential impact to endangered/threatened species or their habitat by the facility's discharge(s)?	X		
18. Have impacts from the discharge(s) at downstream potable water supplies been evaluated?			X
19. Is there any indication that there is significant public interest in the permit action proposed for this facility?		X	
20. Have previous permit, application, and fact sheet been examined?	X		

Part II. NPDES Draft Permit Checklist (FY2003)

Region III NPDES Permit Quality Checklist – for POTWs

(To be completed and included in the record only for POTWs)

II.A. Permit Cover Page/Administration	Yes	No	N/A
1. Does the fact sheet or permit describe the physical location of the facility, including latitude and longitude (not necessarily on permit cover page)?	X		
2. Does the permit contain specific authorization-to-discharge information (from where to where, by whom)?	X		

II.B. Effluent Limits – General Elements	Yes	No	N/A
1. Does the fact sheet describe the basis of final limits in the permit (e.g., that a comparison of technology and water quality-based limits was performed, and the most stringent limit selected)?	X		
2. Does the fact sheet discuss whether "antibacksliding" provisions were met for any limits that are less stringent than those in the previous NPDES permit?			X

II.C. Technology-Based Effluent Limits (POTWs)	Yes	No	N/A
1. Does the permit contain numeric limits for ALL of the following: BOD (or alternative, e.g., CBOD, COD, TOC), TSS, and pH?	X		
2. Does the permit require at least 85% removal for BOD (or BOD alternative) and TSS (or 65% for equivalent to secondary) consistent with 40 CFR Part 133?	X		
a. If no, does the record indicate that application of WQBELs, or some other means, results in more stringent requirements than 85% removal or that an exception consistent with 40 CFR 133.103 has been approved?			X
3. Are technology-based permit limits expressed in the appropriate units of measure (e.g., concentration, mass, SU)?	X		
4. Are permit limits for BOD and TSS expressed in terms of both long term (e.g., average monthly) and short term (e.g., average weekly) limits?	X		
5. Are any concentration limitations in the permit less stringent than the secondary treatment requirements (30 mg/l BOD5 and TSS for a 30-day average and 45 mg/l BOD5 and TSS for a 7-day average)?		X	
a. If yes, does the record provide a justification (e.g., waste stabilization pond, trickling filter, etc.) for the alternate limitations?			X

II.D. Water Quality-Based Effluent Limits	Yes	No	N/A
1. Does the permit include appropriate limitations consistent with 40 CFR 122.44(d) covering State narrative and numeric criteria for water quality?	X		
2. Does the fact sheet indicate that any WQBELs were derived from a completed and EPA approved TMDL?			X

II.D. Water Quality-Based Effluent Limits – cont. (FY2003)	Yes	No	N/A
3. Does the fact sheet provide effluent characteristics for each outfall?	X		
4. Does the fact sheet document that a "reasonable potential" evaluation was performed?	X		
a. If yes, does the fact sheet indicate that the "reasonable potential" evaluation was performed in accordance with the State's approved procedures?	X		
b. Does the fact sheet describe the basis for allowing or disallowing in-stream dilution or a mixing zone?	X		
c. Does the fact sheet present WLA calculation procedures for all pollutants that were found to have "reasonable potential"?	X		
d. Does the fact sheet indicate that the "reasonable potential" and WLA calculations accounted for contributions from upstream sources (i.e., do calculations include ambient/background concentrations)?			X
e. Does the permit contain numeric effluent limits for all pollutants for which "reasonable potential" was determined?	X		
5. Are all final WQBELs in the permit consistent with the justification and/or documentation provided in the fact sheet?	X		
6. For all final WQBELs, are BOTH long-term AND short-term effluent limits established?	X		
7. Are WQBELs expressed in the permit using appropriate units of measure (e.g., mass, concentration)?	X		
8. Does the record indicate that an "antidegradation" review was performed in accordance with the State's approved antidegradation policy?	X		

II.E. Monitoring and Reporting Requirements	Yes	No	N/A
1. Does the permit require at least annual monitoring for all limited parameters and other monitoring as required by State and Federal regulations?	X		
a. If no, does the fact sheet indicate that the facility applied for and was granted a monitoring waiver, AND, does the permit specifically incorporate this waiver?			X
2. Does the permit identify the physical location where monitoring is to be performed for each outfall?	X		
3. Does the permit require at least annual influent monitoring for BOD (or BOD alternative) and TSS to assess compliance with applicable percent removal requirements?		X	
4. Does the permit require testing for Whole Effluent Toxicity?	X		

II.F. Special Conditions	Yes	No	N/A
1. Does the permit include appropriate biosolids use/disposal requirements?	X		
2. Does the permit include appropriate storm water program requirements?			X

II.F. Special Conditions – cont. (FY2003)	Yes	No	N/A
3. If the permit contains compliance schedule(s), are they consistent with statutory and regulatory deadlines and requirements?	X		
4. Are other special conditions (e.g., ambient sampling, mixing studies, TIE/TRE, BMPs, special studies) consistent with CWA and NPDES regulations?	X		
5. Does the permit allow/authorize discharge of sanitary sewage from points other than the POTW outfall(s) or CSO outfalls [i.e., Sanitary Sewer Overflows (SSOs) or treatment plant bypasses]?			X
6. Does the permit authorize discharges from Combined Sewer Overflows (CSOs)?			X
a. Does the permit require implementation of the "Nine Minimum Controls"?			X
b. Does the permit require development and implementation of a "Long Term Control Plan"?			X
c. Does the permit require monitoring and reporting for CSO events?			X
7. Does the permit include appropriate Pretreatment Program requirements?	X		

II.G. Standard Conditions	Yes	No	N/A
1. Does the **permit** contain all 40 CFR 122.41 standard conditions or the State equivalent (or more stringent) conditions?	X		

List of Standard Conditions – 40 CFR 122.41

Duty to comply
Duty to reapply
Need to halt or reduce activity not a defense
Duty to mitigate
Proper O & M
Permit actions
Property rights
Duty to provide information
Inspections and entry
Monitoring and records
Signatory requirement
Bypass
Upset
Reporting Requirements
Planned change
Anticipated noncompliance
Transfers
Monitoring reports
Compliance schedules
24-Hour reporting
Other non-compliance

2. Does the permit contain the additional standard condition (or the State equivalent or more stringent conditions) for POTWs regarding notification of new introduction of pollutants and new industrial users [40 CFR 122.42(b)]?	X		

Part II. NPDES Draft Permit Checklist (FY2003)

Region III NPDES Permit Quality Review Checklist – For Non-Municipals

(To be completed and included in the record for all non-POTWs)

II.A. Permit Cover Page/Administration	Yes	No	N/A
1. Does the fact sheet **or** permit describe the physical location of the facility, including latitude and longitude (not necessarily on permit cover page)?			
2. Does the permit contain specific authorization-to-discharge information (from where to where, by whom)?			

II.B. Effluent Limits – General Elements	Yes	No	N/A
1. Does the fact sheet describe the basis of final limits in the permit (e.g., that a comparison of technology and water quality-based limits was performed, and the most stringent limit selected)?			
2. Does the fact sheet discuss whether "antibacksliding" provisions were met for any limits that are less stringent than those in the previous NPDES permit?			

II.C. Technology-Based Effluent Limits (Effluent Guidelines & BPJ)	Yes	No	N/A
1. Is the facility subject to a national effluent limitations guideline (ELG)?			
a. If yes, does the record adequately document the categorization process, including an evaluation of whether the facility is a new source or an existing source?			
b. If no, does the record indicate that a technology-based analysis based on Best Professional Judgement (BPJ) was used for all pollutants of concern discharged at treatable concentrations?			
2. For all limits developed based on BPJ, does the record indicate that the limits are consistent with the criteria established at 40 CFR 125.3(d)?			
3. Does the fact sheet adequately document the calculations used to develop both ELG and /or BPJ technology-based effluent limits?			
4. For all limits that are based on production or flow, does the record indicate that the calculations are based on a "reasonable measure of ACTUAL production" for the facility (not design)?			
5. Does the permit contain "tiered" limits that reflect projected increases in production or flow?			
a. If yes, does the permit require the facility to notify the permitting authority when alternate levels of production or flow are attained?			
6. Are technology-based permit limits expressed in appropriate units of measure (e.g., concentration, mass, SU)?			

II.C. Technology-Based Effluent Limits (Effluent Guidelines & BPJ) – cont.	Yes	No	N/A
7. Are all technology-based limits expressed in terms of both maximum daily, weekly average, and/or monthly average limits?			
8. Are any final limits less stringent than required by applicable effluent limitations guidelines or BPJ?			

II.D. Water Quality-Based Effluent Limits	Yes	No	N/A
1. Does the permit include appropriate limitations consistent with 40 CFR 122.44(d) covering State narrative and numeric criteria for water quality?			
2. Does the record indicate that any WQBELs were derived from a completed and EPA approved TMDL?			
3. Does the fact sheet provide effluent characteristics for each outfall?			
4. Does the fact sheet document that a "reasonable potential" evaluation was performed?			
a. If yes, does the fact sheet indicate that the "reasonable potential" evaluation was performed in accordance with the State's approved procedures?			
b. Does the fact sheet describe the basis for allowing or disallowing in-stream dilution or a mixing zone?			
c. Does the fact sheet present WLA calculation procedures for all pollutants that were found to have "reasonable potential"?			
d. Does the fact sheet indicate that the "reasonable potential" and WLA calculations accounted for contributions from upstream sources (i.e., do calculations include ambient/background concentrations where data are available)?			
e. Does the permit contain numeric effluent limits for all pollutants for which "reasonable potential" was determined?			
5. Are all final WQBELs in the permit consistent with the justification and/or documentation provided in the fact sheet?			
6. For all final WQBELs, are BOTH long-term (e.g., average monthly) AND short-term (e.g., maximum daily, weekly average, instantaneous) effluent limits established?			
7. Are WQBELs expressed in the permit using appropriate units of measure (e.g., mass, concentration)?			
8. Does the fact sheet indicate that an "antidegradation" review was performed in accordance with the State's approved antidegradation policy?			

II.E. Monitoring and Reporting Requirements (FY2003)	Yes	No	N/A
1. Does the permit require at least annual monitoring for all limited parameters?			
a. If no, does the fact sheet indicate that the facility applied for and was granted a monitoring waiver, AND, does the permit specifically incorporate this waiver?			
2. Does the permit identify the physical location where monitoring is to be performed for each outfall?			
3. Does the permit require testing for Whole Effluent Toxicity in accordance with the State's standard practices?			

II.F. Special Conditions	Yes	No	N/A
1. Does the permit require development and implementation of a Best Management Practices (BMP) plan or site-specific BMPs?			
a. If yes, does the permit adequately incorporate and require compliance with the BMPs?			
2. If the permit contains compliance schedule(s), are they consistent with statutory and regulatory deadlines and requirements?			
3. Are other special conditions (e.g., ambient sampling, mixing studies, TIE/TRE, BMPs, special studies) consistent with CWA and NPDES regulations?			

II.G. Standard Conditions	Yes	No	N/A
1. Does the **permit** contain all 40 CFR 122.41 standard conditions or the State equivalent (or more stringent) conditions?			

List of Standard Conditions – 40 CFR 122.41

Duty to comply
Duty to reapply
Need to halt or reduce activity not a defense
Duty to mitigate
Proper O & M
Permit actions
Property rights
Duty to provide information
Inspections and entry
Monitoring and records
Signatory requirement
Bypass
Upset
Reporting Requirements
Planned change
Anticipated noncompliance
Transfers
Monitoring reports
Compliance schedules
24-Hour reporting
Other non-compliance

2. Does the permit contain the additional standard condition (or the State equivalent or more stringent conditions) for existing non-municipal dischargers regarding pollutant notification levels [40 CFR 122.42(a)]?			

Part III. Signature Page (FY2003)

Based on a review of the data and other information submitted by the permit applicant, and the draft permit and other administrative records generated by the Department/Division and/or made available to the Department/Division, the information provided on this checklist is accurate and complete, to the best of my knowledge.

Name	Becky L. France
Title	Environmental Engineer Senior
Signature	Becky L. France
Date	5/21/08